Fifteenth Year of Publication

Industrial FINISHING

Reg. U. S. Pat. Office

Devoted to Product Finishing in the Factory

Vol. XV, No. 12 **OCTOBER, 1939** **$2.00 a Year**

Contents of This Issue

Letters from Readers of Industrial Finishing 4
Finishing Room Control Produces Uniform Results 10
Metal Cleaning 15
Dipping K. D. Chair Parts 22
Luminous and Fluorescent Paints—and Their Effects 26
Controlled Finish Drying Prevents Many Costly Finishing Troubles 34
Dip Finishing Handles of Wood, in Clear and Colored Lacquers 44
New Materials, Supplies, Equipment 52
Questions; Answers 58
Editorial 66

Agitate Your Thinner 18
"Red Devil"—Catalog 68 Pages 18
Dupor Respirator 24
Los Angeles Furniture Mart—Jan. 29 to Feb. 3 43
Steam Vapor Spray Cleaning 43
Cavalon Upholstery Material 50
Heat-Resistant White Enamel Tests 63
Booklet on Rubber Gloss Wax 65
Protective Heresite Coatings for Autovent Fans 65
Sherwin-Williams Announces Product Finishing Program 71
Tung Oil Alternatives 71

"Classified Advertising" Section 71
Advertisers' Index 72

Published by

Practical Publications, Inc., 222 E. Ohio St., Indianapolis, Ind.

Eastern Representative: C. A. Larson, 254 West 31st St., New York City; Phone Penna. 6-9049

Letters from Readers

OF INDUSTRIAL FINISHING

These letters (and many others) were answered recently by the editorial department, but are published here to reveal certain interesting trends of desire and activity in the industry, and to encourage additional inquiries, comments and suggestions. Further information about any of them can be obtained by writing this office.—Editor.

Hot Lacquer Equipment

Please forward promptly to my attention a list of manufacturers producing equipment only for hot lacquer circulating outfits similar to that illustrated in article appearing in May issue on hot lacquer.—R. M. D. (Purchasing Dept.).

Wrinkle Finish

You have an article on page 39 of the June 1939 issue, entitled, "New Wrinkle Finishes are Beautiful and Durable." We would appreciate more information about this new wrinkle finish.—X. Bros. (Furniture).

Phosphorescent Powder

We are looking for some information regarding phosphorescent powder used in finishes. We believe that some time ago a list of a number of suppliers of these powders appeared in INDUSTRIAL FINISHING.—T. W. Co.

Chemical Resistant Finish

In the July 1939 issue of INDUSTRIAL FINISHING, there is an article beginning on page 30, by R. L. Masterson, on a chemical resistant finish. We are interested in this finish as we have several hundred square feet of birch tops for laboratories, with similar finish specified. Will you ask the manufacturers of this product to send us a sample of the material in sufficient quantity to finish a small sample for approval and for testing purposes, together with full directions for its use, and any other descriptive literature that they may have?—B. Mfg. Co. ("The Master Fixture Builders").

This is only one of several similar inquiries received since publication of the two-part article in June and July issues.—ED.

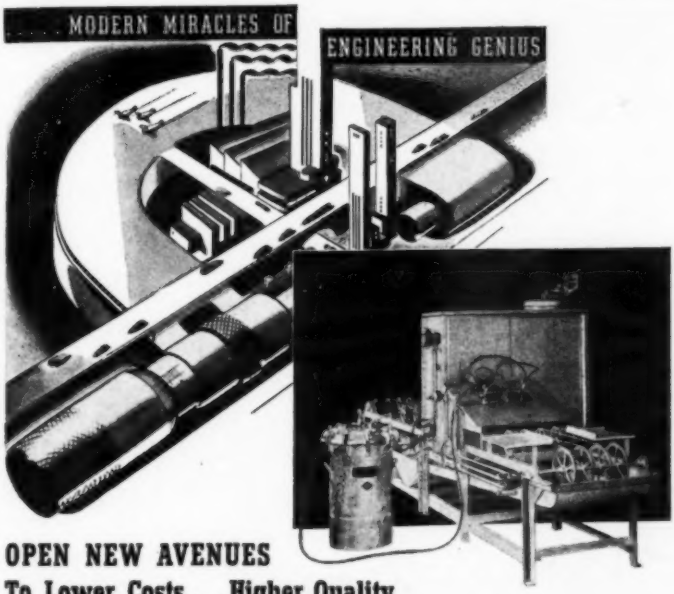
Clean Compressor

I am very much interested in an article entitled "Clean Cool Air for Better Spraying Results," which appeared in the August issue of INDUSTRIAL FINISHING, pages 58 and 59. This article was about the compressor with rings made of carbon so that the necessity for lubrication has been eliminated. I would like to have the name of the manufacturer, as well as any other information you may be able to give me.—N. S. B. (Paint Dept.).

Information has been given.—ED.

Rubbing Compound

I have read in INDUSTRIAL FINISHING magazine for July 1939, page 52, that Phenoid Rubbing Compound No. 125 can be used with or without water and by hand or with a rubbing machine. Will you kindly communicate with the chemical company in Newark, N. J., and request them to



OPEN NEW AVENUES
To Lower Costs... Higher Quality

WITH DeVILBISS AUTOMATIC SPRAY EQUIPMENT

Modern conceptions of highway construction are still in the future. But, here today, are ingenious engineering achievements that perform modern miracles in spray coating products—automatically. DeVilbiss Automatic Machines do it speedily, skillfully and with unsurpassed economy.

Modern DeVilbiss Automatic Spray Equipment is working wonders in cutting costs and increasing profits for many industrial executives who had believed that their products could not be coated automatically. Today, under all manner of plant operating conditions, DeVilbiss Automatic Equipment is treating products of many different sizes and shapes with every type of material. Chances are, it can be put to work for you. A DeVilbiss Spray Expert can tell you quickly.

If DeVilbiss Automatic Machines can replace manual operations in your plant, a letter, wire or phone call for a DeVilbiss representative may be the best investment you ever made. Take action now!

DE VILBISS SPRAY SYSTEMS

THE DE VILBISS COMPANY • TOLEDO, OHIO • U.S.A.

mail full information about their compound No. 125, together with samples of same?—M. M. (Finishing Foreman).

In July issue INDUSTRIAL FINISHING, on page 52, with reference to "Rubbing Compound for Lacquer Finishes", we are interested in receiving a sample of Phenoid Rubbing Compound No. 125, which is a product of a chemical company in Newark, N. J. Would you kindly inform me as to the name of the company? —S. Inc.

It's Chalmers Chemical Co., 123 Chestnut St., Newark, N. J.—ED.

Bleaching Material

Would you give me some information on the bleaching of mahogany wood? I have a large piece of dark mahogany and would like to lighten the color somewhat. Could you tell me what to use or perhaps where I'd be able to obtain this information?—L. P.

I understand there is a bleach that will bleach black walnut as light as maple. I am very much interested in this bleaching material. If you know what it is, will you please let me know or put me in touch with a firm that makes it?—E. M. S.

Thin Metal Strips

On page 61 of August issue of INDUSTRIAL FINISHING, we note that someone is interested in a supplier of thin finished metal strips. We would be pleased to have you advise us the name and address of the party interested in this product.—Philadelphia Steel and Wire Corp. (T. G. C., Chief Engineer).

Flock Finishing

We noticed, in August issue, an interesting article about the application of colored flock to paper, cloth and different cover materials. Can you tell us what concerns to write to get detailed information relative to application of this material, the price and any other general information we feel we should require?

We would also like to know where to write relative to a machine that

Metalized
VENETIAN BLIND FINISHES
Roller Coat — Spray — Extrusion Machine
LACQUER-SYNTHETIC AIR-DRY BAKE TYPES

VENETIAN UNDERCOAT W1674—*in white and tints*

Excellent for two coat operation—Covers and seals all woods perfectly —Finish coat gives appearance of three coat job—Dries like lacquer and covers more than synthetic or oil base finish. Dries in 15 minutes—ready for topcoating—speeds production. Long mileage—very economical!

We produce a complete line of finishing materials for the Venetian Blind Industry. All are proven products. Lacquer and synthetic types are made for any machine or spray operation. Send us your production problems. We have a wealth of experience in this field.

Write for special venetian blind color card and working sample of Metalized Venetian Undercoat W1674—no charge.

LACQUERS THINNERS ENAMELS METALIZED FINISHES SYNTHETICS

UNITED LACQUER M'F'G. CORP.
General Offices: 67 West 44th Street, New York, N. Y.
Laboratories and Factory: Linden, N. J.

will apply the flock to different materials and relative to the proper lacquer or varnish for holding the flock to the paper.—K. S. Co. (Stationery).

We have been referred to you by the DuPont Co., for an answer to our inquiry regarding the "flocking" process now in use. We would appreciate any information you might be in a position to offer regarding the type of equipment and material required for this process, and possible sources for purchase of same.—M. R. Co. (Radio Cabinets).

Paint Agitator

Can you furnish us promptly the address of a firm that makes an electric-driven paint agitator that attaches to top of steel drum and connects to agitator that is in drum?—W. Mfg. Co.

Automatic Spray Machine

Would you kindly furnish us full information and prices regarding an Automatic Spray Machine (F3614), which we came across on page 62, in the February issue of INDUSTRIAL FINISHING? We are particularly interested in this machine, as we are manufacturers of enamel signs, and at present we are coating our backgrounds by hand spraying.—C. G. Co., Johannesburg, So. Africa.

Manufacturer notified.—ED.

Tumbling Barrels

We would like to get a list of manufacturers who make tumbling barrels for tumble finishing small parts with lacquer.—W. W. Co. (Lacquer Mfrs.).

We are interested in contacting a manufacturer of tumbling barrels, for coating small wooden parts, or a jobbing company, selling these. In the event you don't have this information on file, I would appreciate your specifications for having one built.—T. Lacquer Mfg. Co.

Barrel Agitator

We are advised that you have advertised motor-driven agitators for paint and varnish products in your magazine. We are interested in equipment to agitate a 50-gallon barrel of latex. We would prefer

Paasche
Automatic
Airpainting Units

Automatic Airpainting Unit with Oscillating Arm. Pats. No. 2,069,844; No. 2,069,845

SAVE THOSE COSTLY PRODUCTION HOURS

A Paasche Automatic Airpainting Unit means more profits for you—the automatic tile coating unit illustrated is now paying big dividends because of these four savings:

1. Greater continuous production—1,875 metal tile squares coated uniformly every hour.
2. Savings in material—uniform full coverage with no loss of material.
3. Better, more attractive finishes—guns automatically oscillate and apply exact amount of material wanted — no rejects now.
4. Savings in floor space — decreased maintenance — reduced labor and handling costs.

Unit is 21 ft. long; 3 ft. wide; 2 ft. 6 in. high with 32 in. stroke airoperating oscillating device.

Let our engineers show you how to coat your product automatically—better, faster and at less cost. Send samples and indicate production desired—no obligation.

Profit with Paasche

Paasche Airbrush Co.
1917 DIVERSEY PARKWAY
CHICAGO

In Canada — A. R. Williams Machinery Co., Ltd., Toronto; Omer De Serres Ltd., Montreal.

CHRISTMAS

WILL SOON BE

HERE

★

DRESS UP

your products with a spray gun coating of RAYON FLOCKS to make them sell. That velvety sheen will enhance the eye appeal and attract attention to show cards, signs, toys, boxes, glass and metal products, paper mache and countless other articles.

Use CHRISTMAS RED
HOLLY GREEN
SNOW WHITE

plain or in combination.

★

DRESS UP FOR CHRISTMAS

NOW!

Write for Samples and Prices.

CLAREMONT WASTE MFG. CO.

CLAREMONT, N. H.

The country's leading makers

a cradle type rack on which we could set the 50-gallon barrel and agitate same with a motor drive.—S. Mfg. Co. (Textile Trimmings).

Names and addresses of manufacturers have been given.—ED.

Painting Rubber Toys

We desire to obtain a source of supply for paints which can be used for spraying rubber toys.—S. D. Co. (Displays).

Gold Cote Finish

We are interested to learn more about Gold-Cote Finish V-954, as noted on page 50 of January 1939 issue. We are particularly interested in obtaining a luster finish, if it is possible, with this material.—Y. Mfg. Co. (Electric Fixtures).

Spray Stencils

You have an inquiry on page 64 of April 1939 issue, wherein R. O. C. wants stencils made for use in spray painting. We make stencils for the trade and do job enamel work.—Dexter Lacquer & Enamel Co.

Reclaiming Overspray

In August issue of INDUSTRIAL FINISHING there is an article, on page 48, covering the subject of Turntable Reclaiming Overspray for Spray Booths. Will you kindly advise the full address of the American Wood Carving Co. of Chicago, and also the address of Mr. W. C. Westfall of Chicago who is going to market the above item?—C. G. Co. (Toys, Electrical Products).

It's 2337 N. Greenview.—ED.

Buffing; Polishing

Please send us a list of books and literature you have on buffing and polishing. Please advise prices.—G. L. Co. (Machinery).

In past issues of INDUSTRIAL FINISHING, we have published a few articles about buffing and polishing varnished and lacquered surfaces on furniture, novelties, turnings, etc. If you desire tear sheets of some of these articles, we will be glad to send same to you. We are also ask-

"TOPS"

Brand New!

"TOPS" — The one-coat finish.

NO HEATING OR BAKING.

TOPS air dries fast as lacquer. Single coat guaranteed equal in body to any two-coat lacquer job. It's as tough as lacquer and is both alcohol and water resistant. Offered exclusively by . . . . . .

V. J. DOLAN & COMPANY, INC.

Mfrs. of "Unquestionable Quality" Wood Finishing Supplies

1830-32 NORTH LARAMIE AVENUE CHICAGO, ILLINOIS

ing the Lea Mfg. Co. of Waterbury, Conn., to send you a copy of their free booklet entitled "The Lea Method of Finishing", which, we understand gives information on this subject.—ED.

Fluorescent Paints

Will you kindly advise where I may obtain fluorescent and phosphorescent (luminous) paints and pigments?—C. D. D.

Meters for Paint

Please suggest names of manufacturers of meters suitable for measuring consumption of synthetic enamels. We would like to obtain such meters with other metals substituted for the brass or bronze parts.—C. Mfg. Co. (Sheet Metal Products).

Glue for Hardwood

In September issue of INDUSTRIAL FINISHING, on page 8, you have a request from the O. R. Novelty Co., for a glue for hardwood. We believe we have the answer to this problem and will be glad to send them samples and prices, providing this arrangement is satisfactory with you or, if you will give us the complete address of the O. R. Novelty Co., we will write them from here.— Fine A Products.

Furniture, 1,000 Carloads

One of our friends in Lenoir, N. C., writes that the furniture manufacturing business is good there; says he understands that more than 1,000 carloads of furniture were shipped from Lenoir during the month of August 1939.—ED.

Sound Deadener

We are in the market for a sound deadening material that can be applied with a spray gun on the insides of steel cabinets. Will you please pass our inquiry on to manufacturers of this material or else give us the names of such manufacturers?—H. Mfg. Co. (Steel Kitchen Equipment).

Gelatin Rollers

Referring to an inquiry under the above title in July issue, page 65, we use No. 4 compound—the same as is

(Continued on page 70)

Finishing Room Control

Q.—How can we solve major finish problems and troubles that are causing us great distress and adding unnecessarily to our cost?

A.—Try Controlled Finishing! Control the mixing, viscosity and delivery of materials to all spray guns. Control the fluid pressure; compressed-air pressure and supply, and all spraying equipment. Control the temperature, humidity, and movement of air in room; also the ultimate film thickness.

Left: Using a DuPont cup to determine viscosity of a batch of white enamel. Photograph, courtesy of the DuPont Co.

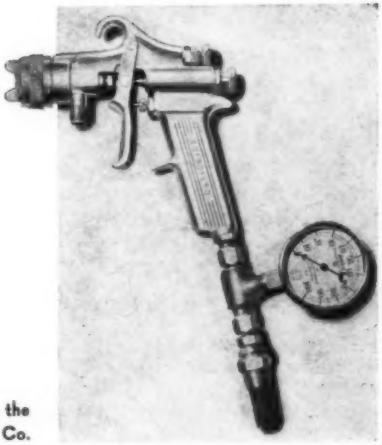
UNIFORMITY of the product is important in successful production operations, and is necessary for repeat business. Control is the basis of uniformity of product, and this applies particularly to uniformity of the finish.

Controlled finishing, with its accompanying improvement in the quality of the finish and economies in material and labor, is practical for smaller manufacturers as well as for the larger plants.

Control over the uniformity of finish of products embraces many factors such as the type of product or surface being coated; the quality of the material; the spray equipment, its adaptability for the work, its condition and adjustment — and, last but not least, the man behind the spray gun.

Produces Uniform Results

BY
L. W. LAMMIMAN
Service Engineer
The DeVilbiss Co.



Photos for all illustrations, except the one at left, furnished by DeVilbiss Co.

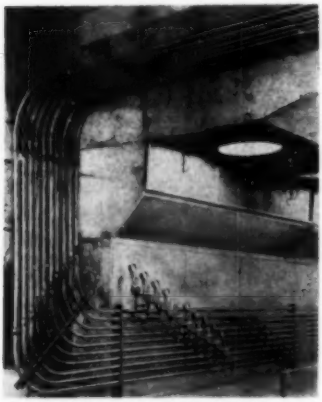
Controlled finishing in an industrial finishing room includes material control of (a) viscosities, (b) mixing, and (c) delivery; it includes control of fluid pressures; control of air supply and pressures; control of film thickness; control of spray equipment and repairs; control of exhaust, replacement air, temperature, and cleanliness in the finishing room.

Such a control set-up for the larger industries pays for its upkeep many times over by economies effected, rejections minimized and satisfied customers. For small plants, because of the limited quantity and variety of materials used, such a degree of control may not be so practical, but even in their case many of the control ideas are applicable and will be found advantageous.

Control of Finishing Material Viscosity; Mixing

Material control includes control of viscosities, mixing and delivery of finishing material.

All mixing rooms are, or should be, equipped with a viscosity cup or some means of measuring the viscosity of finishing materials to be supplied the spray operators for application. We know that each material has a certain viscosity which is considered as the best point of flow. Possibly a temperature standard has also been recommended for best application of the material and for highest type of finish on the product.



Notice the wide bends in pipe lines and staggered fluid regulator arrangement in this typical paint-circulating system.

If material is thinned too much its hiding capacity may be impaired. It may have a tendency to run or sag, consequently the best possible material control should be set up to hold materials at their proper viscosities, and to use the type and quantity of thinners recommended by their manufacturers. Frequently in the application of synthetic enamel, in case the proper thinner is not used, the finish will have a sandy appearance. Finishers often say the pigment was not properly ground, but the real facts are that if proper thinner had been used, all of the small particles would have dissolved and the material would have flowed out smoothly.

The man in charge of mixing materials should be instructed in the proper care and cleaning of his equipment, how necessary it is that all material be strained, why viscosities must be maintained and, where he has several manufacturers' materials in use, how necessary it is that he use the thinner corresponding to the material being mixed.

Mixing room control should be such as to insure uninterrupted production schedules—and to prevent shut-downs due to dirt in materials with consequent gun troubles, rough finishes resulting from improper viscosities, or other difficulties brought on by using wrong thinners, thus tending to produce excessive orange peel or improper drying and possibly causing a quick breakdown of the finish.

Delivery of Material to Spray Gun Operators

Control of the delivery of material to the spray guns and operators cannot be passed over lightly. You must consider the cost of the material sprayed by each gun in the course of a day. For complete control of the delivery of material to the spray gun (where 30 or more gallons of one kind of material are used in a day) the paint circulating system reduces paint handling costs and increases output.

Delivery of clean fresh uniformly mixed materials through pipe lines to the spray guns makes for better working conditions. It eliminates the trucking of paint through the plant, prevents any mess around spray booths, makes possible a greater degree of plant cleanliness and reduces fire hazard. There are no containers to clutter up the booths or to be cleaned and refilled.

Paint Circulating System

Each pipe line carries a different color or kind of material. The finishing material for the paint supply lines is put into mixing tanks in a central control mixing

room and is thoroughly mixed by a motor-driven agitator. It then is drawn from the tanks through the pumps, is strained and is circulated constantly from the mixing room directly to spray operators and returned to the mixing room. Regulated paint outlets are provided at the various spraying locations. Each fluid regulator is equipped with a fluid cock, and fluid hose to the spray gun is attached to the outlet.

The circulating system is a positive guard against the fluid flow being tampered with by spray operators. The fluid regulator key is retained by the foreman or gang leader, making it impossible for an operator to increase or decrease the flow of material to the gun. With this arrangement, positive control of material delivery is constantly maintained. Any tendency of operators to interfere with the paint mixture by adding thinner to suit their convenience is eliminated. Dirt troubles are done away with, and "off color" is held to a minimum. When "off color" does occur, it generally can be traced directly to an operator who is slighting his work, consequently the cause can be quickly found and corrected.

Finishing material is delivered to spray guns at a uniform pressure, insuring even application in the proper thickness by each spray operator, thus lessening sanding and polishing.

Differences in Spray Operators

Wherever paints or finishing materials are applied by hand spraying, the man behind the gun is an important factor. Spray operators may be compared in general to house painters, interior decorators and artists. Although all use the same materials and tools, each man may have certain abilities not found in others. Operators spray differently, and

Here is illustrated part of the paint-circulating system in a large automobile plant.

control is necessary for those who have the least ability.

A large manufacturer interested in the possibilities of controlled finishing decided to find out how nearly alike his operators sprayed insofar as material consumption was concerned. He installed a fluid flow meter at one position in his production line and checked each operator working at this position. Each man sprayed 50 of the same objects with no control on fluid passing to the spray gun. It was found that one operator sprayed one pint more of material on each of the 50 objects than any of the other operators. Fluid control was quickly adopted, resulting in a considerable saving per unit.

Other savings are effected on the wear of spray gun parts. If the material is regulated to the spray gun in such a manner that the spray operator can leave his fluid adjustment wide open on the spray gun, allowing the fluid needle to be drawn back out of the fluid tip opening, less wear occurs on the fluid tip and needle and longer life of these parts is assured. Then, too, with fluid control and with the spray gun fluid adjustment open, the pull of the fluid adjustment spring is taken off the trigger. Consequently, the operator triggers the gun more frequently, cutting off the spray and eliminating the waste of material at the end of each stroke of the gun.

Size of Fluid Hose

The size of fluid hose recommended for best control of material flow to the gun is a ⅜-in. I.D. (inside diameter) x 11/16-in. O.D. spray-painting hose. This size permits sufficient material to be supplied to the spray gun, so that the hose is washed clean by the constant movement of material. This is desirable because some materials have a tendency to drop out of suspension. Hose of this size also is light and flexible, giving the operator better control of the spray gun.

Control of Air Supply and Pressure

Control of the air supply and pressure is necessary. There are several methods, and diverse opinions as to the preferred method and the most effective pressure to employ. Air is to a spray gun what gasoline is to an automobile engine. Both are necessary to create action. However, it might be well to mention some facts which have a general bearing on air supply and pressure.

In most large factories the air compressing equipment is located in a clean room and the intake air to the compressor is usually taken from outside the building. This air is compressed and discharged into a large air tank closely connected to the compressor. The air is then piped to a large tank centrally located and known as an "after cooler". It is equipped with cold water coils or some other means to cool the air as it expands on entering the tank. The air is then piped all over the plant to points wherever compressed air is needed. The size of the pipe depends on requirements in cubic feet of air necessary to operate all spraying equipment and other air tools. Air lines act in the same way as a storage tank and the larger the pipe the less the drop in pressure.

The air line usually consists of a galvanized iron pipe from the

compressor storage tank to the transformer (the equipment by means of which the air is filtered of oil, moisture and other impurities, and the pressure regulated) and a length of hose from the transformer to the spray gun. Both pipe and hose must be of sufficient size to restrict as little as possible the passage of air through them. The main air line should not be smaller than the outlet valve through which the air leaves the air storage tank. Pipe take-offs from the main air line to the transformer should never be smaller than ⅜-in.

All air lines should have sufficient elevation so that moisture collected in lines will drain back to the air tank, where it can be drained off. All branch pipes should be taken off at the top of the line and then dropped down to the operator or machine where air is used.

Common sizes of spray gun air hose are ¼-in. and 5/16-in. inside diameter. The larger the hose the less restriction there is in the volume, and the smaller the drop in the pressure of the air. Large manufacturers have found that a 5/16-in. I.D. x ⅝-in. O.D. hose is best suited for production spraying. This size of hose is flexible and light, and the loss in air pressure between the air outlet and the spray gun is very small. The ¼-in. size air hose is not recommended with standard production spray guns and should never be used in this service in any length over 12-ft. *(To be continued)*

Metal Cleaning

BY RAYMOND H. NEILSON
Neilson Chemical Co., Detroit

THE PREPARATION of metal surfaces to receive primer, paint or any finishing material, is a matter that deserves careful attention. Even though a comparatively poor paint may adhere to metal that has been properly prepared, it is a fact that the very best paint will fail to adhere to metal improperly treated or cleaned.

In hundreds of factories grease, oil and dirt are cleaned from metal surfaces with a gas or thinner soaked rag or an alkali wash. Many production executives feel confident that when this is done they have g i v e n t h e metal a proper cleaning, not realizing that alkali salts, deposits from sweating hands, chlorides and other rusting or harmful a g e n t s are still present on the metal in an invisible or only slightly visible state. These invisible deposits, remaining on the metal, will eventually cause chipping or flaking or a general break-down of the finish.

Remove Whatever Causes Rust

Alkali salts, hand marks, sweat deposits and other injurious and rusting agents are not destroyed or readily removed by washing with gasoline, thinner or such solvents. Neither can oxide or oily films, formed in the rolling of the metal, be removed with gasoline or thinner. Although rust may be removed with sandpaper and plenty of hand labor, unless some of the metal is taken off with it, the rusting agents underneath the rust and in the pits will still remain. These tiny spots continue active and will increase in size unless chemically destroyed. In time they cause new rust to develop under the paint and will not only impair the bond but will affect the life of the paint job itself.

The fact that these harmful factors are not readily visible is chiefly responsible for many concerns not realizing the importance of a more effective and thorough cleaning operation.

Commercial cleaning materials are available which will not only remove the grease, dirt and rust, but they will destroy the rusting agents at the base of the rust. Proper treatment with a suitable cleaning compound will leave a clean dry surface.

Kill Traces of Acid

The action of certain cleaning materials is such that the cleaning fluid apparently evaporates or dries the solvent properties of any oil. Soldering acid chlorides are destroyed thus preventing rust from developing afterwards on the metal underneath the paint.

Certain commercial cleaning solutions, when properly used, destroy the rusting agents caused by sweating hands which are spread about on the metal in handling. They also destroy the rusting agents caused by fumes from pickling and soldering acids which float about the plant and settle on the metal. They neutralize and destroy harmful alkali salts which may be present on the metal or which may have been left on the metal from a prior alkali wash. They remove the oxide or oily film formed in the rolling of the metal. They chemically etch the metal, thereby forming an ideal surface for receiving the prime coat.

Kill "Greasy Surface" of Aluminum and Galvanized Metal

In the case of aluminum, and its alloys, galvanized iron and other soft metals, a liquid cleaner penetrates into the pores of these metals. At the same time it changes the oily or greasy texture of such metals and leaves a hard surface which is fully receptive to the paint finishes. The surface of such metals is also given a microscopic etch, thus producing a more permanent bond between the metal and the paint.

The liquid cleaner has much the same action on zinc die-castings, dow metal, ply metal, cadmium, electro-galvanize and galvaneal surfaces.

These commercial metal cleaners may be used in several different ways. In the wipe-off method, recommended by one manufacturer of commercial cleaners, the cleaner residue is usually removed by wiping with clean dry cloths. In the wash-off method, the residue is removed by a water rinse. From these two methods numerous subdivisions may be worked out to fit existing local conditions

Some of the Outstanding Advantages of

M & W
DUART WRINKLE ENAMELS

All colors available, including white, pastels, clear...applicable to all metals and many other materials...one coat completely covers surface defects...any pattern, from very fine to very coarse...one hour bake, at low or medium heats...uniform patterns, without "fish eyes"...slow or quick drying, as desired...easily touched up and patched...light in body, easily sprayed... 200 square feet per gallon...hard, long wearing finish...corrosion resistant.

SEND FOR YOUR COPY

DATA FOR THE PRACTICAL FINISHER—The new Duart Wrinkle Enamel Data Bulletin contains the information that the practical finisher wants: colors, use of bronze powders, grades for various structures, baking schedules, spraying conditions, touching up and patching, etc., etc.

Maas and Waldstein Co. Newark, N. J.

Branch Offices and Warehouses . . 1336 Washington Blvd., Chicago . 1228 W. Pico Blvd., Los Angeles

Established 1876 — Producers of Lacquers and other Industrial Finishing Materials

where metal is to be prepared for paint or finishing material.

Special Cleaners Solve Special Problems

Metal cleaning problems should be referred to reputable manufacturers who have had years of experience in the manufacture and servicing of chemical cleaning compounds for cleaning metal preparatory to finishing. They have several grades of cleaning materials, each designed to meet a particular condition. In addition to this, they often make up a special material to meet a particular problem.

Reference: "Metal Cleaning Hints", Neilson Chemical Co., Detroit; Copyrighted Bulletin, 1937.

Agitate Your Thinner

IN THE OLD DAYS, if a finisher were asked if he mixed the turps well before using, he might have easily thought you were squirrelly — and he would have had a reason. Nowadays, if you ask some finishers if they shake the thinner can thoroughly before using they will reply: "Shake the thinner can? Who in Hades ever heard of shaking a thinner can?"

At first thought, agitating the thinner might easily seem strange. But when one considers that modern thinners are formulated of many substances, it is then easy to see why these various ingredients may separate and cause a finisher trouble.

A recent case typifies what one can expect from thinner that has not been agitated. A paint shop that operated two shifts, ran into trouble with sags. Some of the finished pieces wouldn't dry. The strange thing about this trouble was that the day shift turned out good work except for orange peel, while the second shift just couldn't prevent the finish from running.

Upon investigation it was found that just one can of thinner was used each day. The day shift used the top half of the thinner and left the bottom half for the second shift to use. The thinner was a slow-drying type with retarder added. The retarder naturally settled to the bottom of the thinner can. As soon as the finishers became aware of the fact that they should "Shake the thinner can until you're blue in the face," their trouble was over.

The reason that pieces wouldn't dry was because of an overdose of retarder. This was also the reason why the second shift could not stop runs. Incidentally, the first shift's orange peel trouble was caused by the thinner drying too fast. Their work didn't have time to flow out.

Quite often you will notice that when the bottom of a drum of thinner is reached, the thinner will cause the paint to fume when it is added—the reason being that the thinner is just too hot.

A difference in the viscosity of the finishing material will be noticed as different ingredients of the separated thinner are added.

I am convinced that a lot of the trouble in modern finishing rooms is due to unagitated thinner.—R. E. KARLE.

"Red Devil"—Catalog 68 Pages

L. P. Smith, Inc., Irvington, N. J., is distributing a new 68-page, 8½x11-in. catalog No. 17—a reference manual for dealers in the paint, building material and general hardware specialty trades.

Get all

in your DRYING and BAKING EQUIPMENT

Speed
Control
Flexibility
Economy

Quick heat; uniform temperatures; time and fuel savings; immediate response to heat and load changes —combined advantages to users of Ross Air Heaters and Ovens.

J. O.
ROSS ENGINEERING
CORPORATION
350 MADISON AVE., NEW YORK, N. Y.
CHICAGO, ILL. DETROIT, MICH. PITTSBURGH, PA. PORTLAND, ORE.
ROSS ENGINEERING OF CANADA, LTD., Dominion Square Building, Montreal

SEND TODAY F
NEW 1940 C

BINKS MANUFACTURING COM

AY FOR BINKS' BIG 40 CATALOG AND PRICE GUIDE

Are you looking for faster and more economical finishing methods? Do you want to know about the latest developments in spray painting equipment and its costs? Do you want an easy-to-use catalog that gives the answers to everyday finishing problems, as well as engineering and performance data on all types of spray guns, spray booths, air compressors, painting outfits, extractors, respirators and hose? Then fill in the coupon below and send it in today. We will rush you a free copy.

RUSH ME A COPY

of the Binks 1940 Catalog and Price Guide by return mail. I need something like this for reference purposes.

NAME _____

POSITION _____

COMPANY _____

ADDRESS _____

CITY AND STATE _____

OMPANY 3114-40 CARROLL AVENUE **CHICAGO**

Dipping K.D. Chair Parts

BY T. J. PIRRUNG

Methods, equipment that were rigged up quickly to handle big order for knock-down chairs to be given a two-coat varnish finish.

SOME YEARS ago our company was the successful bidder for a large Government chair order. These chairs were to be shipped completely knock-down and all parts were to be dip-finished with two coats of varnish.

We were well equipped with dipping tanks and drain boards for dipping assembled chairs, and our first thought was to utilize this equipment by constructing a rack above the drain board for hanging the dipped parts to drain. However, a thorough analysis of this plan brought out the following facts: 1) Since the drain board was 20-ft. long, the operator would have to move, on an average, 10-ft. to and 10-ft. from points where the parts would be suspended; 2) within three hours time the rack above the drain board would be filled and, in order to continue dipping, additional racks would have to be constructed; and parts would have to be moved from the regular drain board to the new racks; 3) at least 60% of the labor time could be saved if this extra work could be eliminated from the dipping.

To accomplish this we built three rotating racks and one portable dipping tank (see Fig. 1). We placed casters under the dipping tank so that it could be moved from one rotating rack to the next. The center support for the circular rack consisted of a 4-in. pipe, set perpendicular and rigidly braced on the floor. Each revolving rack was approximately 9-ft. in diameter and well braced to prevent any part of it from sagging when loaded. Screw hooks were attached around the

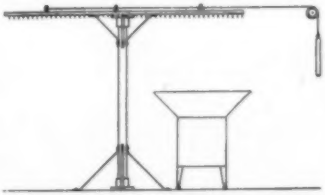


Fig. 1 — One of the three rotating racks (counterweighted to permit loaded rack to turn easily) and the portable dipping tank with flaring backboards on three sides to catch drips.

under side of the revolving rack to within 30-in. of the center. When loaded with dipped chair parts, the total weight of this circular rack was about 700-lbs., therefore, a weight, cable and pulley were added to make the rack easy to turn.

The dipping tank was made with sloping backboards on three

UNIFORMITY ★ PERMANENCE ★ STABILITY

U·P·S Stains

● In U. P. S. the Glidden Company introduces a new line of Stains which embodies the best features—and eliminates the negative characteristics—of all currently used types.

U. P. S. Stains are manufactured in primary concentrates—red, yellow, orange and black—or in concentrated or ready-to-use form to match individual requirements. In concentrated form they take reductions as high as one part to eight parts or more of denatured alcohol.

U. P. S. Stains may be applied by brushing or spraying, or small objects may be dipped. Drying time is so quick that recoating can be done in forty-five to ninety minutes, depending on conditions. They contain a binder that takes light sanding, so that shellac wash coating is not imperative.

UNIFORMITY—Penetrate soft and hard parts of wood uniformly.

PERMANENCE—Comparable to Water Stains.

STABILITY—Will not change color in the package.

Glidden engineers will assist you in establishing color standards.

THE GLIDDEN COMPANY • National Headquarters, Cleveland, O.

Factories in: Reading • Chicago • St. Louis • Minneapolis • New Orleans
Los Angeles • San Francisco • Toronto, Canada

GLIDDEN
Everywhere on Everything

GLIDDEN PRODUCTS CARRY THE FAMOUS "TIME-TESTED" MARK OF QUALITY

sides to catch drippings which continued for about 10 minutes, which was considerably less time than a man required to load a section of rack directly above the dip tank. These three circular racks and the portable dip tank made it possible for us to apply a dipped coat to 8,000 parts a day, which was adequate to meet the delivery terms of our contract.

Our next problem was to devise inexpensive hangers and holders for the chair parts—

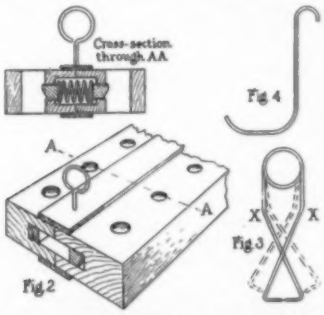


Fig. 2—Details of part of a multiple holder for tenoned chair legs and rungs to be dip-finished. The open ends are sealed. Spring latches grip the tenoned ends.

Fig. 3—Typical spring clip for holding a top slat. Clips are opened by applying hand pressure at points XX.

Fig. 4—A soft heavy-wire hook for parts that had holes near top.

holders that could be easily and quickly applied. Exclusive of the chair seat, which was not to be dipped, the parts of each chair consisted of: One top slat, five back spindles, two bent pillars, four legs and eight rungs. The back spindles, legs and rungs had round tenons on the ends; these parts amounted to 85% of the total number of pieces to be dipped. There were two sizes; the legs had tenons 13/16-in. in diameter; the rungs and spindles were 9/16-in. in diameter at the tenons. This made it necessary for us to make holders of two different sizes. Holders for chair legs were made large enough to hold 18 legs each; those for rungs and spindles held 30 pieces each. Details of a typical divided holder with its double row of holes to receive tenons, and the hidden spring latch strips to automatically clamp them, are shown in Fig. 2.

The operation was lightning fast. On spindles and rungs, less than three minutes time was required to place the parts in holders, dip the group of 30 pieces, and hang the holder to the overhead rack.

To prevent varnish from entering and clogging the pressure mechanism of the spring holders, the open ends shown in Fig. 2 were tightly sealed and a float was used in the dip tank to prevent immersing the holder.

Spring clips for holding top slats, and wire hooks for the pillars (which had holes at the top) are shown in Figs. 3 and 4 respectively. These clips and hooks served our purpose satisfactorily, but working with them was slow because pieces had to be dipped individually. However, the pieces handled this way constituted only 15% of the total number of pieces in the order, therefore more expensive equipment to save time and labor was not warranted for this single job.

Dupor Respirator

A new respirator, known as Dupor No. 46, manufactured by H. S. Cover, South Bend, Ind., has a twin filter area of over 46-sq.in. Filters are of special felt and are adjustable, removable and easily replaced.

EGYPTIAN

FLEXIBLE CLEAR LACQUERS

Air-dry clear lacquers for use on sheet metal which is later to be formed into the finished article . . . Excellent adhesion to brass, aluminum, lead, copper, oxidized copper and steel. Flexibility which will withstand severe bending . . . Full gloss and brilliance which dress up a product to that final touch. Egyptian Flexible Clear Lacquers are tough and extremely durable and may be buffed after forming if desired.

Flexible Lacquer Enamels of the same qualities and characteristics are also available.

Further details upon request.

EGYPTIAN FINISHES

In addition to hundreds of Clear Lacquer formulations made to meet standard and individual requirements, we also make a complete line of pigmented lacquers and Synthetics. Ask for details.

EGYPTIAN FINISHES

THE EGYPTIAN LACQUER MANUFACTURING CO.
ROCKEFELLER CENTER
NEW YORK

Luminous and Fluorescent

An advertising display in daylight or electric light (above) and how it looks in darkness (below) with near-U.V. rays directed on the fluorescent painted areas.

SEVERAL inquiries for luminous and fluorescent paints have come to INDUSTRIAL FINISHING recently from various concerns, and in servicing these the Editor has obtained considerable interesting information on the subject. Paints that make surfaces glow or shine in the dark are used in stage productions, advertising displays, interior decorations, exhibits of many kinds, novelties, and for various other purposes where it is desirable to have certain areas emit a more or less colorful but mellow glow in total darkness.

In the first place there is a distinct difference between luminous or luminescent and fluorescent paints and their practical value.

Articles painted with luminous paints must be exposed to light first in order to make them glow in the darkness afterward.

Articles painted with fluorescent colors need not be exposed previously to any light, but will glow in the dark only so long as an invisible ultra-violet light (black light) is turned on them. The moment this invisible light is shut off the colors cease to glow.

Luminous paints also glow under the U. V. light, but when this light is turned off they continue to glow in the dark for some time.

Luminous Paints

Let us consider some of the details of luminous paints. According to one manufacturer, "there

Paints—and Their Effects

BY W. H. ROHR

In complete darkness, surfaces coated with fluorescent paints absorb invisible short-wave ultra violet radiations (black light), change their wave lengths and re-emit them as colored light visible to the human eye in vivid fiery colors of sensational beauty.

Photographs, courtesy of Continental Lithograph Corp. (Division of Luminescence)

Stirring fluorescent paint, as seen in daylight (above) and in the dark where invisible U.V. radiation makes it glow.

are two types of luminous materials, namely the 1) self-luminous which, through activation with radio-active compound, shine in the dark without need of exposure to a light source; and 2) luminous compounds which shine in the dark with various color effects such as red, orange, green, sea green, yellow, blue and violet. Surfaces painted with these materials must be exposed to bright sun or artificial light, after which the bright color effect persists perhaps for a minute or so, but a pale light effect will continue for some hours in complete darkness.

"The No. 1 materials are very expensive and are quoted in gram lots at from about 50 cents to as high as $25.00 per gram, depending on the quantity of radio-active material contained. One gram mixed with a suitable binder makes a lacquer sufficient to cover 3 or 4-sq. in. of surface. The No. 2 materials sell by the ounce or pound at from 75 cents per ounce for the violet, to $3.50 per ounce for other colors. These materials can be mixed with damar varnish or a special clear lacquer and can be applied with brush or spray gun.

"The duration of light effect persists all night in total darkness from radio-luminous com-

pounds. Others vary from a few minutes to from three to six hours. It is best not to expose the luminous or fluorescent materials to outdoor service, as some of them deteriorate rapidly under the varied climatic conditions. Indoors, protected with a suitable transparent lacquer coating, they should have a life of over one year."

The manufacturer of another brand of luminous paints states, in his circular, that "a few seconds exposure to strong white electric light or daylight is sufficient to bring out, in complete darkness, the green, yellow or red luminescence of luminous paints. The glow is brilliant in the first few minutes following exposure to light; then it gradually fades away. However, a dim glow remains for several hours. Longer exposure to light will not increase the duration of luminescence.

"The luminous quality will remain for years if the objects are kept indoors but will lose their luminosity rapidly if continually exposed to outside daylight and sunlight. The green luminous paint is the most brilliant and retains its glow for the longest time.

"These luminous paints are permanent and the glow of the painted articles can be restored time and again by simply repeating the exposure to light.

"These particular paints are furnished in water colors, mixed ready for use. They are applied with brush or spray. The paints can be used equally well on cloth, paper, wood or glass. They cover the original color of the material and dry quickly. On metal or leather, the company advises special luminous enamel. One ounce of this luminous paint covers about 1-sq.ft. of surface."

A third manufacturer of luminous paint declares that the company's product "is a heavy liquid chemical preparation containing no radium, phosphorus, lead or any other harmful or disintegrating elements. When soiled, articles coated with this material may be washed with soap and water. Articles coated with this luminous paint absorb light rays when exposed to either natural or electric light, and radiate them in the darkness—a violet color at first, followed by a pure white glow for several hours. The stronger the exposure to light and the darker the location, the brighter the glow which can be seen at its maximum after ones eyes have adjusted themselves to the darkness. The material will adhere to almost any surface such as wood, metal, plastic, fabric, paper, etc."

Fluorescent Paints

In contrast to luminous paints, fluorescent painted surfaces will not emit any light or glow in darkness except while they are being activated by invisible U. V. (ultra violet) light which is often referred to as "black light." According to one manufacturer's literature, "the scientific term of the phenomena obtained with U. V. colors is known as fluorescence; those with luminous paints, as phosphorescence.

"On the stage these luminous effects are often erroneously called radium effects. Radium, however, not only is too costly but will not give brilliant color effects. Our colors do not contain any radium, phosphorus, sulphur or other harmful chemicals.

"The colors are applied like or-

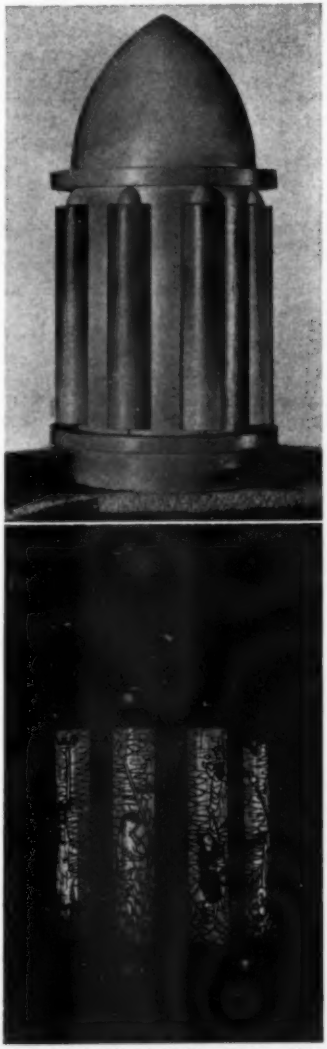
dinary colors—with a brush, spray or other standard method. Then, by following the simple lighting instructions, the most marvelous spectacles can be created.

"These fluorescent colors become luminescent in a darkened room under special U. V. lighting, whereas ordinary colors turn dark; with all other lights out and the U. V. light turned on, only whatever has been painted with fluorescent colors is visible.

"Most fluorescent colors change under U. V. light to a different color from that seen in white light. White (invisible green) becomes bright green, cream changes to blue, yellow to green, orange to yellow, red to orange, magenta to red."

Another manufacturer says: "In order to obtain the fluorescent color effect in the dark, these materials must be excited by a source of U. V. light corresponding to their wave lengths of secondary emanations under this stimulation. For quite a number, the argon glow lamp will bring out their color effect in the dark. This is the least costly and simple means of U. V. light. The same will also respond to a broad beam of U. V. light obtained from a mercury arc lamp, and under this latter stimulation they will glow much brighter in the dark.

"We can supply both lamps, as well as all kinds of fluorescent compounds made up into lacquers, or as pigments. Some of them are colorless when in the form of liquids; the pigments are slightly yellowish in color, and the paints are colored to obtain a daylight color effect and a different one under the U V. light. (Leading electrical supply houses can furnish information and equipment



Example showing how fluorescent paints can be used for novel decorative effects.

to produce the ultra-violet rays.

Here are some questions we asked manufacturers of luminous and fluorescent paints—and their respective answers to same are identified as Nos. 1, 2 and 3.

Preparation of Surface

Q. What preparatory or conditioning treatment should the surface be given before the luminous paint is applied? In other words, should it be painted some certain color with a certain kind or type of material?

1—"In preparing porous substances such as wood, it is advisable to use a filler first in order to give a smooth surface. Metal surfaces are best prepared with a coating of clear lacquer before applying luminous coating. No treatment of paper or cardboard is necessary. If the background is dark, the least fluorescent material is needed to produce a given brilliance if a white reflecting ground coat is first applied. There are, however, cases in which a dark background may be preferable to gain certain effects, particularly when using ultra-violet excitation in which the visible light is filtered out."

2—"Surface to be coated with luminous or fluorescent paint must be scrupulously clean. A priming coat of zinc white should be applied; let this dry and then apply the top coating of luminous or fluorescent paint."

3—"C—— fluorescent lacquer-enamels are opaque and heavily pigmented. Thus, no preliminary conditioning or other treatment of the surface to be painted is ordinarily required. In this, we depart widely from any fluorescent coating composition previously sold. As an example, we cite the technique now being utilized by a large number of neon sketch artists who apply the lacquer-enamels directly upon black illustration board, a technique heretofore impossible with success. It has likewise been applied successfully over black and other colored velvets."

Apply With Brush or Spray

Q. How do you recommend that the material be applied? By brush, or can it be sprayed?

1—"The luminescent pigment should be mixed with nitrocellulose dope and thinned to the proper consistency for either brushing or spraying. A protective coating of clear lacquer is sometimes then applied. Spraying is preferred in this instance."

2—"Can be brushed on with a clean brush, which should not be used for different colors at the same time. Can also be sprayed. The fluorescent lacquers we supply will give the desired results with one coat. The lacquers should contain sufficient pigment to make a smooth application."

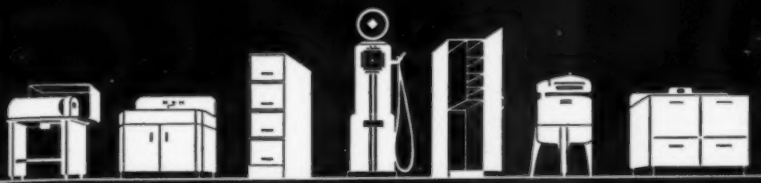
3—"C—— fluorescent lacquer-enamels are applicable with virtually equal success by brushing, spraying or dipping. They flow perfectly when applied by brushing or dipping, and spray successfully even in the very finest art guns available."

Color of These Paints

Q. What color is the material after it has been applied and become dry?

1—"Many of the materials have a natural color which is a light yellow or orange, but the majority are white."

2—"Most pigments are yellowish in color when dry. This applies to luminous as well as fluore-



IRONERS · UNDERSINK CABINETS · OFFICE EQUIPMENT · GASOLINE PUMPS · KITCHEN CABINETS · WASHERS · STOVES

MAKERS OF PRODUCTS LIKE THESE SAY

"POLYMERIN* HELPS US SELL"

ALERT MANUFACTURERS of nearly all types of metal products are turning to Polymerin, the original speed-bake metal finish, to get the important sales and production advantages which this remarkable new finish provides.

Polymerin Is Exceptionally Tough. Your customers will appreciate its beauty and durability. Polymerin resists all common deteriorants. These characteristics will add sales appeal to your products. This lustrous finish is amazingly mar-resistant; even blows hard enough to dent the metal itself will not crack the Polymerin surface.

Polymerin Speeds Production. The original speed-bake metal finish, Polymerin makes possible amazingly short baking schedules. You save money and increase production with Polymerin!

Users Recommend Polymerin. Leading manufacturers say that Polymerin is helping them to solve sales and production problems. Polymerin is being used to finish *washing machines, ironers, stoves, heating devices, electrical appliances, bicycles, vending machines, office equipment, gasoline pumps, shower stalls, kitchen cabinets, radiator enclosures, metal novelties, and many other types of products.* INVESTIGATE POLYMERIN TODAY! Write Dept. I.F.T., Ault & Wiborg Corporation, 75 Varick Street, New York City.

**Trade Mark Reg. U. S. Pat. Off.*

AULT & WIBORG CORPORATION

makers of POLYMERIN, the original speed-bake metal finish

scent ones. The lacquers we supply are colorless and transparent."

3—"We are enclosing color slips for your inspection. The colors are fire orange (almost red), invisible green (pale green), arc yellow and invisible blue (very pale grey). We know their intensity of luminescence will prove a pleasant surprise when you expose them to black light (near ultra-violet light) in a semi-darkened room."

Character of Surface

Q. Is it better to have the surface smooth or rough, flat or curved (convex or concave) or with many angles?

1—"The shape and character of the surface is immaterial to the brightness of the luminescence."

2—"It does not make any difference how the objects are formed. Of course, they must be clean, and a smooth surface is always preferable."

3—"Inasmuch as fluorescence has proved to be virtually a surface phenomenon, it has been found that little if any advantage is to be derived by breaking up a surface into prismatic structures, etc. Understand that a fluorescent surface, during exposure to ultra-violet light, is actually giving off light. Each tiny pigment particle may be considered a light source radiating intense visible light in all directions."

Q. Can luminous material be used on metal, wood, fiber, rubber, canvas, leather and various composition materials? Does it produce better results on one material than on another?

1—"These materials have been successfully applied to wood, cardboard, paper, glass and metal, and could just as well be applied to other materials. A plasticiser should be added to the binder if the support is flexible."

2—"Luminous material can be used on any or all materials which take an even coating of lacquer. The nature of the material to be coated has no influence on the emmission of light. Of course, should the base contain acids or alkalis, it would be well to neutralize same by first applying a coating of untreated lacquer."

3—"The C —— fluorescent lacquer-enamels are readily applicable over all of the materials you mention, and further over such materials as plaster, sandpaper, asbestos, etc. If the proper coating is applied in all cases, they will produce equally successful results over almost any conceivable rigid surface."

Number of Coats Needed

Q. How many coats of material are needed or recommended to produce satisfactory results?

1—"The number of coats necessary depends on the skill of the operator. A single heavy coat can be sprayed on."

2—"Two or three coats, depending upon surface to be covered."

3—"C—— fluorescent lacquer-enamels may be compared to ordinary highgrade enamels as regards the number of coatings necessary. Over light-colored grounds, one heavy spray coat or brush coat will cover. Over darker grounds, two coats may be necessary."

The use of luminescent chemicals is just now beginning to take hold. A great deal of experimental work is being done in various fields. Fluorescent tubing for use in the lighting and adver-

(Continued on page 63)

37% SOLIDS

at the gun

NOROY **LACQUER W-1055**

[*The Original Clear Gloss and Flat Wood Lacquer with 37% Solids*]

Check these advantages

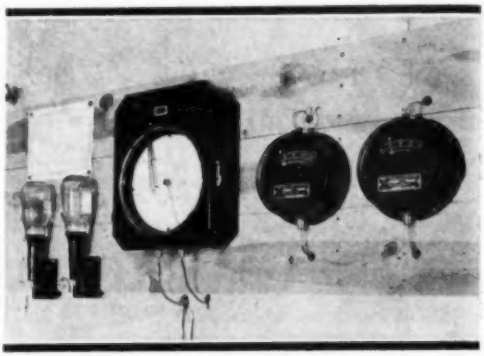
1. A specially developed production finish for the FURNITURE INDUSTRY.
2. One coat produces a high build and a beautiful finish.
3. Eliminates one finishing and two sanding operations.
4. Saves Time — Space — Money.
5. NOROY LACQUER W-1055 is guaranteed in quality and uniformity. Attractively priced.

Complete data and information on NOROY LACQUER W-1055 will be sent on request.

RUDD LACQUER & SEALER CORPORATION

127 MAIDEN LANE NEW YORK, N. Y.

Factory: Rahway, N. J.



Modern recording and control instruments on wall between spray room and drying room reveal temperature and humidity conditions within drying room.

Controlled Finish Drying

PREVENTS MANY COSTLY FINISHING TROUBLES

BY C. O. JUDD
Chief Chemist of Sunbeam Electric Manufacturing Co.

FROM many years of experience, manufacturers of finishing materials have found that several finishing troubles are directly traceable to three important factors, namely—humidity, temperature, and circulation of air. Today, at the inception of conveyor systems and forced-drying methods, it is imperative that the prospective customer give recognition to the study of these three major factors. Unless this is done, his results may be very discouraging. These factors will be discussed in the following paragraphs.

What "Humidity" Is

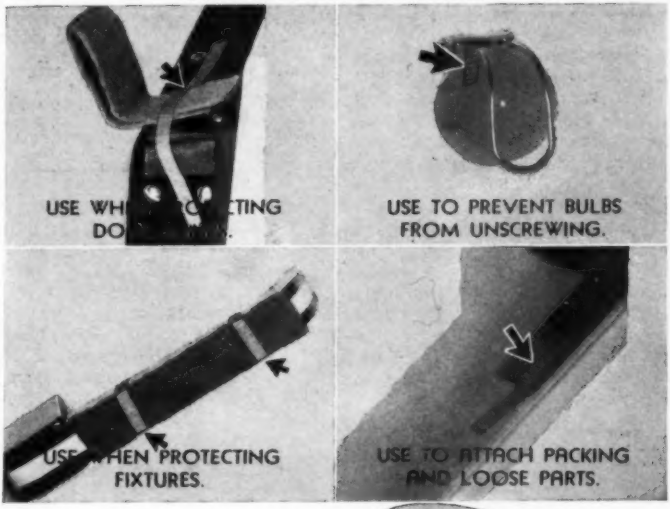
The amount of moisture or water vapor in the air at any time is called humidity. Under natural conditions the relative humidity varies from 90% or more down to as low as 20%, which is desert humidity. The average relative humidity of the U. S. A. is about 69%.

The atmosphere has the property of holding various amounts of water vapor. The maximum amount of water vapor that a given space can hold at one time is always the same. When the maximum capacity under a given state of conditions has been reached, more moisture cannot be added without condensation taking place. Under such conditions, the air is said to be saturated. Now, if we take that given volume of saturation and increase the temperature, the capacity of

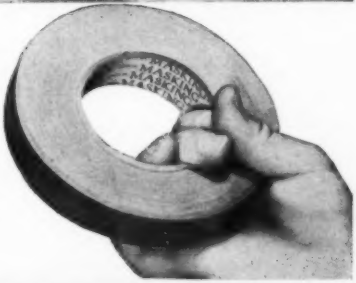
To Aid In Protecting A Good Finish Use

SCOTCH MASKING TAPE

(Pressure Sensitive—Seals Without Moistening)



Scotch Masking Tape is handy for attaching packing—holding loose parts—and for masking areas when shipping. It is pressure sensitive—seals without moistening and is easy to apply. When removed it leaves no residue—no after cleanup is necessary. Try Scotch Masking Tape as an aid in protecting your finishes.



Made and Patented in U. S. A. by

MINNESOTA MINING & MFG. COMPANY

SAINT PAUL MINNESOTA

The Desire To Serve — The Ability To Produce

Under one or more of the following U. S. Patent Nos.: 1779588, 1856986, 1914132, 1895978, 1950613, 1956885, 2156380, Re. No. 18942, 19138

Canadian Manufacturers and Distributors, CANADIAN-DUREX ABRASIVES, LTD., 154 Pearl St., Toronto, Can.

the air to hold water vapor will increase. With a decrease in temperature of the original volume, the excess moisture will be condensed until an equilibrium is reached by a saturated condition at the new temperature.

The temperature at which air is saturated is called the dew point. With cold air, this dew point is reached when only small quantities of water vapor are present, but as the temperature increases, so does the air's capacity for holding moisture. The absolute humidity of saturated air increases more rapidly with an increase of temperature. The accompanying table shows the absolute humidity of saturated air at various temperatures — the grains of moisture required to saturate a cubic foot of air at the various temperatures.

Temperature in Degrees Fahrenheit	Absolute Humidity Grains Per Cu. Ft. of Air
30	1.946
40	2.863
50	4.106
60	5.795
70	8.055
80	11.04
90	14.94
100	19.95
110	26.34
120	34.38
130	44.41
140	56.81
150	71.99
160	90.43
170	112.6
180	139.2
190	170.7
200	207.9

Authority for these figures: Heating, Ventilating, Air Conditioning Guide for 1938 . . . . Volume XVI.

It has been found more convenient to express the amount of moisture in the air in terms of the proportion of moisture the air can hold at a specified temperature. This is called relative humidity, or the relation of the amount of moisture present to what it actually could be at that temperature. For example: As shown in the accompanying table, the saturation point of a cubic foot of air at 60°F. is 5.795 grains. The saturation point at 80°F. is 11.04 grains. Now if we increase the temperature of a cubic foot of saturated air from 60°F. to 80°F. without permitting absorption of any more water, we still have only the original 5.795 grains of water vapor in the cubic foot of air at the higher temperature, whereas this cubic foot of air at 80°F. could hold 11.04 grains of water. In other words, the 5.795 grains which the air contains is about 52% of the 11.04 grains which the air could hold; or, by heating the original cubic foot of saturated air, we have created a relative humidity of approximately 52%. If this same cubic foot of air is heated to 100°F. without addition of moisture, we further decrease the relative humidity to about 29%.

If you can arrange to control the temperature, humidity, changes of air per hour and air circulation in your finish-drying room, you will have control of your drying results, which so vitally affect the cost, quality, appearance and volume of your factory products.

Since the amount of moisture that air can hold varies with the temperature, it goes to show that by increasing the temperature of the volume of air containing the fixed volume of water vapor, we decrease the relative humidity. Conversely, by decreasing the

Thousands of pieces of juvenile furniture made in the U. S.

are coated with

LILLY'S FINISHES

WHY?
because they can
take juvenile lambasting

Lilly Varnish Company

Great Britain and Europe:
Apply Jenson & Nicholson
Laboratories, Stratford,
London, England.

666 South California Street, Indianapolis, Indiana
Branches: Chicago, Ill.; Grand Rapids, Mich.; Gardner, Mass.
The LILLY COMPANY, High Point, N. C.

Modern exhaust stacks from spray booths. Photo, courtesy of The R. C. Mahon Co.

temperature we increase the relative humidity.

Wet and Dry Bulb Thermometers

Relative humidity is usually determined by means of psychrometers, or wet and dry-bulb thermometers. The wick around the bulb of the wet thermometer is kept wet by distilled water in a reservoir. As the water evaporates from this wick it has a cooling effect on the wet-bulb thermometer, causing it to read lower than the dry-bulb thermometer. Now the drier the atmosphere, the faster will be the evaporation of moisture from the wick, and the faster the evaporation the greater will be the cooling effect on the wet-bulb thermometer. Consequently, the difference in the reading of the wet and dry thermometers will be greater as the relative humidity becomes lower.

After taking the readings on both the wet and dry-bulb thermometers of one of these instruments, the relative humidity of the atmosphere at that time can be determined by consulting a relative humidity chart. For example: Suppose the dry bulb reading is 100°F. and the wet bulb is 80°F. Find the figure "100°" on the left hand or dry-bulb column, and run over to the right until the line runs up on either side of the figure "80°" in the bottom row and across. The reading in the small square thus located is 42%, which is the approximate relative humidity under these conditions.

It is important that clean soft water be used in the water well of the wet and dry bulbs to prevent a deposit of mineral salts on the wick. This wick should be kept clean or replaced frequently to prevent it from becoming filled with dust and foreign matter, as this would retard the rate of evaporation and cause the readings to be inaccurate. With modern forced drying, the relative humidity is kept the same throughout the year, and no trouble is experienced during the summer months when the relative humidity is high, since the ovens are perfectly controlled and the relative humidity is maintained at all times, and the intake air is water washed.

It is readily seen that to have humidity control, we must also have temperature control. For humidity control may be had at temperatures lower than are advisable for finishing rooms, so there are a few points to bring out on temperature alone.

Just as water will evaporate more quickly at a high tempera-

New office building of S. C. JOHNSON & SON, Inc., *Racine, Wisconsin.*
Designed by Frank Lloyd Wright and hailed as "The Office Building of Tomorrow."

What Kind of Finishes for "THE BUILDING OF TOMORROW"?

Johnson finishes contribute importantly to the beauty of the interior of this remarkable new building. The maple and walnut desks are finished with Johnson's Lacquer and Wax. Frames are finished with Johnson's smooth, mar-resistant Cherokee Red Ceramite. All finishes used on the interior were produced by the Industrial Division of S. C. Johnson & Son, Inc.

The Industrial Division of S. C. Johnson & Son, Inc., manufactures for industrial application a complete line of Synthetics, Varnishes, Lacquers, Stains, Undercoats, Enamels, and special finishes for every purpose.

If you have a difficult finishing problem, write us today. We will welcome the opportunity to work with you in developing a suitable finish at the lowest possible cost per unit.

S. C. JOHNSON & SON, INC. • Industrial Division • Racine, Wisconsin

DO YOU KNOW ABOUT THE NEW

DU PONT PENETRATING PRIMER?

THERE has always been a weak spot in finishing systems employing sanding sealers as first coats.

The weak spot has been the sealer.

To overcome this weakness . . . to give your furniture finer quality . . . Du Pont chemists developed a new Penetrating Primer.

Used in place of sanding sealers as first coats, Du Pont Penetrating Primer definitely increases scratch resistance. It forms a deep, tight bond between wood and finish coat. It has unusual adhesion. It makes furniture much harder to scratch white.

These advantages have been *proved*. Chemists and furniture men conducted careful field tests on Penetrating Primer . . . tests much more brutal than any wear and tear furniture is apt to face in normal service. And its performance puts Penetrating Primer in a class by itself when compared with ordinary sealers.

If you'd like a convincing demonstration of these superior qualities, a Du Pont representative can arrange it right in your plant. Or if you'd like full information, write to E. I. du Pont de Nemours & Co. (Inc.), Finishes Div., Wilmington, Delaware.

DU PONT

PENETRATI
PRIMI

DUPONT
PENETRATING
PRIMER
UNFAIR
TO SCRATCHERS
ATING
IR
Gives better adhesion...
increases scratch resistance

ture, so will the volatile thinners in a finishing material be given off more rapidly, and the drying time will be hastened if the temperature is kept uniform and fairly high. By also controlling the temperature, the same conditions may be had the year round in a finishing room, which is a vital factor both from the standpoint of economy and the lessening of possible causes of trouble.

You Must Also Have Circulation of Air

The air in a finishing room or drying room must circulate freely in order to efficiently carry away the volatile thinners as they evaporate, as well as to provide the best possible conditions for the workmen. Air that comes in contact with the work must be fresh, or it will soon attain a condition like a sponge that has absorbed all the water it can hold. In other words, poor circulation means the air will become saturated with foul vapors and refuse to absorb more, thereby retarding drying. In addition, the available oxygen that is necessary in the drying of varnish films will be reduced, and drying will be delayed further unless more oxygen is supplied in the form of fresh air.

Unless we have absolute control of temperature, humidity, and circulation of the air, the best materials in the form of both the product to be finished and the finishing material are likely to be nullified.

How Finish Films Dry; Wood Filler Drying

Having discussed at length the importance of humidity, temperature, air control and moisture content in the previous paragraphs, I will now mention some of the common troubles experienced through the neglect of caring properly for these factors. Varnish, enamel, and fillers all set up by evaporation and attain their ultimate degree of hardness through oxidation. This means that the volatile thinners present in each of these types of material quickly evaporate from the film and are carried away upon air currents that come in contact with the coated surface.

Experience has shown that a large part of these thinners disappear after a period of 30 minutes or so, but some remain much longer, the quantity less as time goes on. Oxygen in the air then begins to oxidize the coating and continues for quite some time, even after formation of a hard film which required several hours in the air-dry system. Today, with the humified forced-drying ovens that provide a complete change of air 30 times an hour, perfect drying conditions are attained.

Much consideration must be given to the application of filler, in wood finishing. It is the hard pigment silex, together with the binder in the filler, that fills the wood pores and prevents finishing coats from sinking into the pores. This filler should be placed in a pressure tank and continually agitated to prevent the hard pigment from settling to the bottom. Filler should be given sufficent time to dry thoroughly in the bottoms of wood pores before any follow-up coat is applied, or shrinkage will result when the filler does dry. Really, proper drying conditions for filler are most essential. If suitable filler material is used and if it is al-

lowed to dry thoroughly in a modern humidity-controlled oven or drying room, there should be no shrinkage trouble.

Flow-out Time; Spray Booth Exhausts

The sealer coat also rates careful consideration. Limited time should be given for evaporation and flow out, and a short time is required with humidity control in the sealer oven or drying room. This will assure a uniform sanding time the year round, and the old troubles of hot humid summer days will be eliminated.

When applying the finishing coat, the spray booth exhaust fans should be sufficient to assure proper exhaust, and at the same time the volume and speed of air crossing the finished product must be kept down at a minimum to reduce the possibility of case-hardening or quick top drying, as this is likely to leave the undercoat soft. Flow-out time must be sufficient to allow the thinners to evaporate before the product enters the oven or drying room. In case this is not done, the heat will cause entrapped solvents to expand and produce blistering and pinholing.

Clean Air Is Essential for Spraying

Everything possible should be done to prevent dirt, oil and excess moisture from entering the compressed air lines, but granting that some of these undesirables will get into the distributing system, traps, separators or filters should be installed near outlets to insure clean air reaching the spray guns.

The main air lines should have a gradual slope down to a dead end where a drop pipe with a valve at the bottom is allowed to catch all the excess oil and moisture. All take-off lines to the spray booth should goose-neck out of the top of the main air lines and not from the sides or bottom.

It is important that the study of the air line system and spray equipment be made at this time. With modern spray guns equipped with many more air jets than the old type, and with larger air valves, a greater volume of air will be consumed at a much lower pressure. It is recommended that the large air lines be run from the compressor to a central part of the finishing room, and at that location air should be passed through a large condenser into a master air-control valve; and at this point equal distribution of air should be made to each spray booth. With a properly balanced air system, many plants have experienced a great saving in material and a substantial reduction in the time required for getting work through the finishing department.

Los Angeles Furniture Mart—Jan. 29 to Feb. 3

After a poll was taken among the exhibitors in both California Marts, a coordinating committee worked out two separate Market dates. The Los Angeles Furniture Mart has set its Market Week dates at January 29 to February 3, inclusive, for next year.

Steam Vapor Spray Cleaning

Two new models of Hypressure Jenny, the original steam vapor spray cleaner, are illustrated and briefly described in a new 2-color bulletin recently issued by the Homestead Valve Mfg. Co., Coraopolis, Pa. The bulletin gives a long list of products and surfaces that can be economically and quickly cleaned by the vapor spray cleaning method.

Dip Finishing Handles

OF WOOD, IN CLEAR AND COLORED LACQUERS

Samples of turnings finished by author.

BY THOS. F. RICHARDSON

THE WOOD HANDLES which I refer to in this article are made of maple, birch and beech. They are turnings ranging from 1-in. to 12-in. in length, and have various cross-sectional shapes such as round, hexagon, octagon, oval, and square. Some are for bath brushes, neck brushes, paper rollers, tools, table knives and forks, cooking utensils, etc. These handles are made from thoroughly seasoned wood and, once they have been turned, they must be kept in a dry place to prevent them from taking on moisture from the atmosphere.

Tenoned handles to receive a metal ferrule are grooved next to the shoulder. To prevent the ferrule from pushing any of the finish coating up against the shoulder of the handle, this groove should be large enough in width to prevent the lacquer or enamel from bridging across the groove and forming bubbles in the finish. Correctly and incorrectly grooved tenoned handles are shown in cross section, in Fig. 1.

Smooth Handles in White by Tumbling With Pumice

The usual method of smoothing wood handles in the white, before finishing operations begin, is to tumble them with pumice

MAKE SURE OF QUALITY • IN YOUR LACQUER FINISH

A good lacquer finish includes all of the finishing materials from the wood up.

In order to secure an attractive finish from the sales standpoint, the materials must have proper eye appeal. This involves color, texture and all around good appearance. In order that this finish may remain attractive over a period of years, top coats especially must have lasting durability.

You can be sure of a good looking finish that has lasting durability by standardizing on Day materials.

Day Stains, Fillers and Undercoats are developed to have extra sales appeal. The finishes which sell best at the markets are available here, usually a little ahead of the crowd. Day Sealers and Lacquers are pre-tested to insure long life, together with economy in first cost and in application.

Mention your requirements for a good finish and receive a prescription that will add life and appeal to your line.

JAMES B. DAY & CO. • CHICAGO

stone. They are tumbled in a wooden cylinder which measures about 30-in. in diameter by 9-ft. in length. This tumbling barrel has a hinged door extending along its full length to permit rapid loading and unloading—as well as to allow inspection and cleaning of the interior. The barrel is mounted in horizontal position on a central shaft and is power driven through a belt and pulley. It rotates 25-r.p.m. Several hours of tumbling are necessary to smooth the turnings. From 5000 to 20,000 turnings can be smoothed at a time, depending on their size. When tumbling large handles the barrel should be nearly full to prevent the turnings from denting each other.

When the handles have been properly smoothed by tumbling they are transferred to another barrel and tumbled with dry saw-

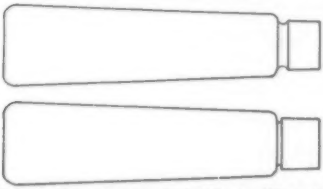


Fig. 1—The lacquer is likely to fill and bridge across a narrow groove, therefore it is desirable to cut in a wider groove between the tenon and shoulder of handles intended to receive ordinary ferrules.

dust to clean them. This barrel is perforated with 3/16-in. holes spaced about 2-in. apart. The handles are tumbled in this barrel until the pumice stone, sawdust and all small wood particles have sifted through the holes.

Actual finishing operations begin with the application of a combination of baking tumbling filler and sealer. This material fills and seals the turnings in a single tumbling operation. An open-end barrel tilted to an angle of about 45° is used. Its speed is about 20-r.p.m. Only enough filler-sealer material is poured in to completely fill and seal the turnings—this amount having been determined from previous experience. The vehicle is taken up by the handles first, leaving the pigment to be pressed into the wood pores and open grain by tumbling. The vehicle "sticks down" any raised fuzz that is on the surface of the turnings.

The time required for tumbling the first coat of filler-sealer is 15 to 20 minutes: This leaves the handles dry. They are then dumped into wooden trays which are 30-in. long, 18-in. wide and 6-in. deep. These trays have wire mesh bottoms to allow air circulation. The trays are filled level with the top and are stacked one on top of the other in the baking oven. Considerable time is required for the heat to reach the center of a batch of handles in each tray, consequently this lengthens the time required to bake them. Five hours at 225°F. will bake the first coat satisfactorily.

After the handles have cooled from the first baking, a second coat of the same material is applied, but this coat takes very little material as it does not soak into the wood like the first coat. It should not be thinned excessively as the solvent tends to soften the first coat which must be hard to withstand the tumbling. This second coat requires only two or three minutes of tumbling. Because of shrinkage of wood and filler-sealer, and owing to the fact that moisture is forced out during

CAN YOU *Swing It?*

How does your product stand up against competition? Does it have enough eye-appeal to merit that all-important first look? Is it attractive enough to enable you to swing it in a satisfactory sales volume?

If the answer is yes, then you are finish-conscious, you know the sales value and the dollars and cents advantage of a smart finish. If the answer is no, then our Creative Studio can be of valuable assistance in bringing your product up to a more salesworthy position.

Our business is making finishing materials and a knowledge of how and where to use them.

Let us tell you how our creative service can assist you without cost or obligation.

ROCKFORD VARNISH COMPANY
Manufacturers of Finishing Materials
ROCKFORD • ILLINOIS

NO TAMPERING WITH QUALITY

the baking process, leaving pinholes in the sealer, a second coat is really needed. Three hours of baking time is sufficient for the second coat. If exactly the right quantity of material has been applied, the handles will not stick together after having been baked; they will easily spill out of the trays.

The points of contact may be tacky immediately after baking but these places will harden when exposed to the air for a few minutes. When the handles become quite cold they are rolled in a dry barrel for three or four minutes to take off some of the gloss and to smooth out any marks made by the turnings touching each other.

Stained and clear lacquer finished handles are filled and sealed with a transparent filler-sealer. Handles to be stained are tumbled in an open-end 45° barrel and sprayed while they are rolling, until they have been completely covered. They are then filled, sealed and finished with clear gloss or clear flat lacquer.

It is important for the lacquer room to be well ventilated. Exhaust fans or ducts, *placed opposite the equipment from the operator*, will take away the vapors as soon as they are liberated from the lacquer. Openings for these ducts should be near the floor of the room, as lacquer vapors move down. Since these vapors are explosive, care must be taken to see that all electric wiring, motors, lights, etc., are spark proof.

Handles Are Stuck on Pinboards and Machine Dipped

Before dipping, the turnings are stuck onto pinboards—pieces of light hardwood ½ to ¾-in. thick, 4-in. wide and 30-in. long. Each pinboard has from 30 to 100 needle-pointed nails protruding from one side and arranged in regular formation to receive handles. The boards with only 30 pins are for the largest handles. After the handles have been pinned, they are straightened up and driven on. These pinboards will easily fit holders on the multiple dipping machine which is capable of dipping as many as 12 loaded pinboards at a time. This means that on small handles (100 to the board) the machine will dip 1200 handles at a time.

The speed of the dipping machine is adjustable. For the first coat, I prefer the handles to be withdrawn at a speed of 2½-in. per minute; for all other coats 3½-in. per minute. When the handles are dipped they must be immersed with a steady motion; if they are allowed to come to a stop before they are all under, a ring of bubbles may be formed around the handles.

Inverting Position of Handles to Straighten Out Runs

Usually a very little surplus lacquer will cling to the handles as they are withdrawn from the material and this lacquer will "run" for a few minutes after the handles have been dipped. To straighten out these "runs" the handles are inverted (so they point upward) and placed in a portable rack. This position causes the lacquer to "run" back toward the other ends, and in so doing the places where sags would have occurred are smoothed out as the lacquer sets.

When the pinboards, loaded with freshly dipped handles, are first taken from the machine,

A NEW BERRY FINISH

Looks and feels like PORCELAIN

AT A FRACTION OF THE COST!

IT'S multiform...

If you want to see something new and different in production finishes, see Multiform! Give it the thumbnail test. Hard and smooth like porcelain, yet highly economical in cost.

Free demonstration in your own plant. Ask about it

Beautiful two-color effects in one continuous spraying operation. Hides surface irregularities and will not collect dust or dirt. Easily adaptable to any finishing room routine.

BERRY BROTHERS
Industrial Varnishes • Enamels • Lacquers
DETROIT, MICHIGAN WALKERVILLE, ONTARIO

Kindly mention INDUSTRIAL FINISHING when writing advertisers

they are positioned so the handles are right side up, and they are allowed to remain this way while the second lot of handles is being dipped (entering the lacquer). As the second lot is coming out of the lacquer (on the up stroke of the machine) the loaded pinboards of the first lot are all inverted and placed in the rack to let the "runs" straighten out. The loaded pinboards, with handles hanging down, are then turned upright to dry after the "runs" have straightened out.

Small Lots; White Undercoats; Hand Dipped Color Finish

To avoid constant changing of tanks, and to keep the amount of lacquer in the tanks at a minimum, an undercoat of white is used on all handles to be finished in color. This is followed by a coat of the desired color, which is hand dipped.

Most dipping lacquers can be thinned to the proportion of one gallon of thinner to ten of lacquer for machine dipping. Rapid evaporation of the solvents makes it necessary to add thinner from time to time to maintain a uniform viscosity of the material. The temperature of the lacquer room should remain constant, as raising the temperature while the handles are wet causes blisters.

Top Coat of Clear Lacquer Machine Dipped

The hand dipping lacquer is reduced in the proportion of two gallons of thinner to one of lacquer, therefore it drains quickly. Only one tank of each color is needed for hand dipping, whereas several are used for the machine. For plain colors two undercoats are required. Since considerable clear lacquer is used on fancy jobs, one undercoat is enough for them. A top coat of clear lacquer is machine dipped on all handles; this gives a high gloss and protects the color coat.

Stained and natural wood finishes are given a coat of clear gloss or clear flat lacquer, machine dipped. This clear is reduced the same as the white undercoat and is applied in the same manner.

After the finish on the handles has "set up" the handles may be transferred to a room where they are subjected to a temperature of 115°F. to hasten the drying.

On damp days in the summer, the lacquer room should be heated to lower the relative humidity. Dampness causes blushing, which makes the handles appear gray. If blushing occurs, it can be remedied by dipping the handles in thinner or clear lacquer.

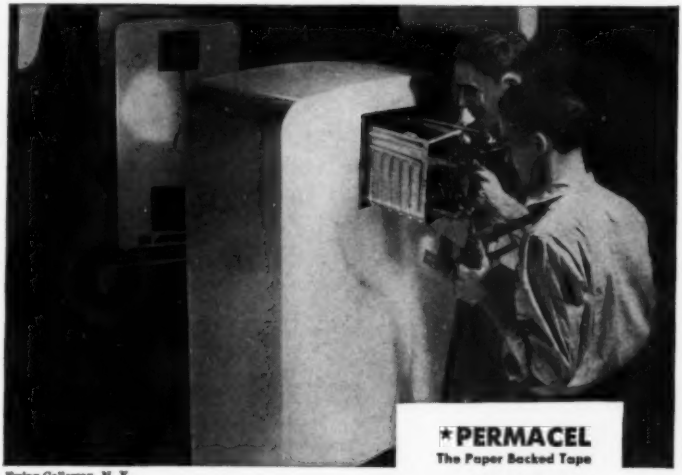
Cavalon Upholstery Material

An attractive reference, booklet describing the many uses of "Cavalon" rubber-coated upholstry fabric has just been issued by the "Fabrikoid" Division of the Du Pont Co. It presents, with illustrations, the outstanding properties of this heavy duty upholstery material and the testing methods used to evaluate these properties. A folder with samples is also included.

The product is similar to genuine leather in that it consists of a fibrous structure held together by a scientifically made binder instead of an animal substance. The smooth, leather-like surface is termed "case-hardened," because it best explains the effect of the chemical treatment.

"Cavalon" has resistance to edge wear, edge cracking, flex cracking, and temperature change. It has also been found resistant to fire, to seat flexing, and to color crocking and bleeding. To determine its resistance to distortion, a strip of the material was given 2,000 scrubs in a laboratory machine, a treatment which had no appreciable effect on the coating or separation from the fabric.

★Used and Preferred by HOME APPLIANCE INDUSTRY



Ewing Galloway, N. Y.

The super adhesive and flexible qualities are outstanding features of Industrial Tape Corporation adhesive tapes.

Used extensively to protect highly polished bright work and finishes; also movable parts such as doors and plates in shipping stoves, ranges, home appliances, etc.

●

Our laboratory is at your service for any special tape problem. No obligation.

INDUSTRIAL TAPE CORPORATION
NEW BRUNSWICK, N. J.

★PERMACEL
The Paper Backed Tape

★JONFLEX
Fine Cloth Tape

★INDUSTRIAL
Coarse Cloth Tape

★UTILITAPE
Waterproof Cloth
Tape in standard colors

ELECTAPE
With the Flexible Bakelite Coating

METACEL
Metal Foil Backed Tape

TEXCEL
Transparent Tape

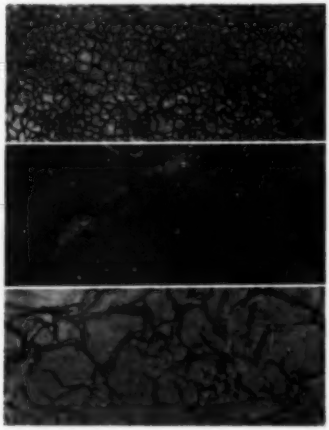
●

Samples on request

Air-Drying Wrinkle in Variegated Colors

A dozen metal panels beautifully finished in various colors and designs of smooth and rough wrinkle finishes, were recently sent to INDUSTRIAL FINISHING by the Fine Art Finishing Co., 1112 Benninghof St., Evansville, Ind. The finishes used are said to represent a new development in air-drying variegated-color wrinkle finishes for product finishing.

Quoting from the company's letter: "Some of these are one-coat and others are two-coat finishes. They are air-drying but may be baked after setting. The finish can be dipped, sprayed, brushed or flowed on. Patterns may be fine, medium or coarse lines, or in round hammered effect, or they may simulate cobweb, fish net or lace effects. These finishes can be applied to surfaces of wood, paper, fiber, metal, glass, plaster, plastics or cloth. Variegated colors blended in an endless variety of designs are possible. The finishes are hard, tough and remarkably durable."



Different patterns are available in smooth and raised wrinkle finish.

Top panel has a raised dark green figure over smooth lustrous yellow gold plating.

Middle panel is a one-coat smooth finish in light and dark brass colors. The pattern is controllable.

Bottom panel (coarse wrinkle) has a raised light green effect over smooth lustrous white gold plating.

New...

MATERIALS SUPPLIES EQUIPMENT

Plating Rack Coating

(Acid Proof Protection)

The Michigan Chrome Co., 6340 E. Jefferson Ave., Detroit, Mich., announces a new protective coating material to be used for insulating plating racks. This coating, known as "Miccrolite," can be applied faster and will air dry much more quickly than the usual plating rack protective coatings. The dipping speed is approximately five times faster than that of the other coatings. Under average drying conditions, one coat can be applied each hour. The seven coats recommended to prepare the racks for plating use can be applied in one day and the racks can be used the following morning.

This material has been developed as an all-purpose protective material for plating racks, used in any solution or acid or in any process. It is not affected through the complete cycle of plating. It is effective in all types of cleaning operations. It contains no pigments but is perfectly clear in appearance, both before and after it is applied.

Miccrolite is of a low viscosity which permits the application of extremely thin, yet effective, coatings.

for

the INDUSTRIAL and TECHNICAL trades

Write Us!

OXFORD VARNISH CORP.

DETROIT, MICHIGAN

No thinner is required except for an occasional surface spraying when racks are being dipped. It assures smooth, uniform coatings, and there is practically no dripping of the material after the racks have been dipped. Webbing or pocketing between contact points is reduced to a minimum.

This material can be applied either by hand or machine dipping. It is applied directly on the metal surface to be coated. No tape or any special treatment is required. If a rack should become damaged in process, it is only necessary to touch up the damaged section, the patch becoming an integral part of the entire coating.

Degreaser Has Solvent Still and Filter

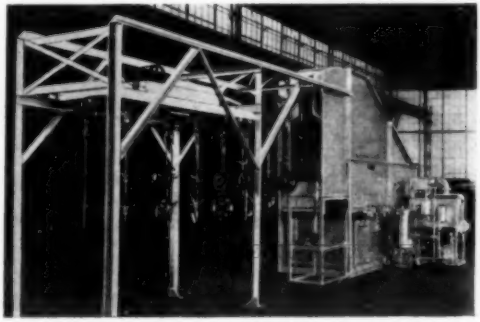
The Detroit Rex Products Co., 13005 Hillview Ave., Detroit, Mich., declares that outstanding operating and maintainance economies have been effected in the cleaning of various types of metal parts by the unique features incorporated in the one-dip, or liquid-vapor design of Detrex degreaser illustrated herewith.

In addition to the usual high speed production cleaning with minimum space requirements that is typical of all degreasing installations, this new design has exceptionally low maintenance requirements combined with thorough cleaning in spite of the heavy carry-in dirt, metallic chips, and oil. These economies have been effected largely through the use of a continuous Detrex solvent still and filter. This machine requires cleaning only about once every 2½ months, in spite of taking care of the cleaning of a very high production. The solvent still and filter remove all oil and insoluble contamination so that the boiling chamber is always full of clean solvent.

The cleaning cycle consists of immersing the work in boiling solvent and passing it out through solvent vapors. At the exit end of the degreaser, there is a light oil spray system that can be used to rustproof the work as is desirable when it is to be placed in storage for any length of time.

The return-type conveyor system is completely self-contained with the load and unload stations extending approximately 19-ft. from the machine. The work is lowered on special fixtures, which handle about a dozen wheel disc inserts each. Rolling and stamping oils and insoluble materials are removed from these parts in the degreaser; the operation being cleaning prior to casting of wheels around insert discs.

The solvent in the machine is heated by steam coil mounted in the removable clean-out door, and there is also a steam-jacketed bottom on the boiling compartment. This combination of steam coils and jacket gives the boiling solvents a vigorous rolling action which completely removes insolubles from the work. All

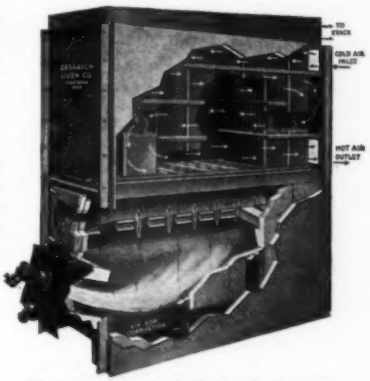


steam connections are tested for a pressure of 40-lbs. per sq.in., and the steam-jacketed bottom is equipped with a pressure relief valve set at 15-lbs. per sq. in.

The solvent capacity of the boiling chamber is 188 gallons, and the clean solvent storage tank is of sufficient capacity to hold all solvent from the machine. The approximate weight, not including solvent still and filter, is 7,500-lbs. The rated production capacity of this machine is 10,000-lbs. of work per hour.

Clean Hot Air for Enamel Ovens

The Despatch Oven Co., Minneapolis, Minn., announces a new heavy duty indirect air heater (gas or oil fired) for economically supplying clean heated air to ovens used for bake finishing. According to the company it has been in course of development over a period of seven years. The company declares that indirect heat is necessary to assure full value from finishes purchased with respect to their durability, luster and color. Features of the air heater are, 1) no combustion gases, carbon



Phantom view of indirect air heater.

TOUSEY . . *Announces a New Development in Finish*

No. 1 CHROMELUME

A Ready Mixed Aluminum Which Combines the Following Qualities:

1 — Extreme brilliance.
2 — Fifteen minute air dry.
3 — Will not rub off after ageing.
4 — Covers 2,000 square feet per gallon.
5 — Will not settle or pack in tank or container.
6 — Can be dipped, sprayed or flow coated.
7 — Retains its brilliance indefinitely inside.

We believe no other similar type of finish has the above seven qualities in one material. There are other Chromelumes for such purposes as outside durability, water immersion, heat resistance, etc. A full description of any of these materials will be sent on request. Address your inquiries to the

TOUSEY VARNISH COMPANY

520 WEST 25th STREET CHICAGO, ILLINOIS

Varnishes — Enamels — Lacquers — Synthetics : Since 1885

or dirt get into the air to affect finishes being processed; 2) explosion hazards are eliminated; 3) the air filtering problem is greatly reduced. As a result, rejects and refinishing costs are cut to a minimum.

Vertical "self cleaning" tubes are used. These tubes are streamlined to obtain maximum air contact and to effect a natural travel for the hot gases through the heat exchanger. This permits the heaters to give maximum efficiency continuously, without the need for using a greater amount of fuel to keep ovens or dryers up to operating temperature. Vertical tubes eliminate weekly or daily cleaning of heat exchanger tubes and effect savings of hundreds of dollars annually.

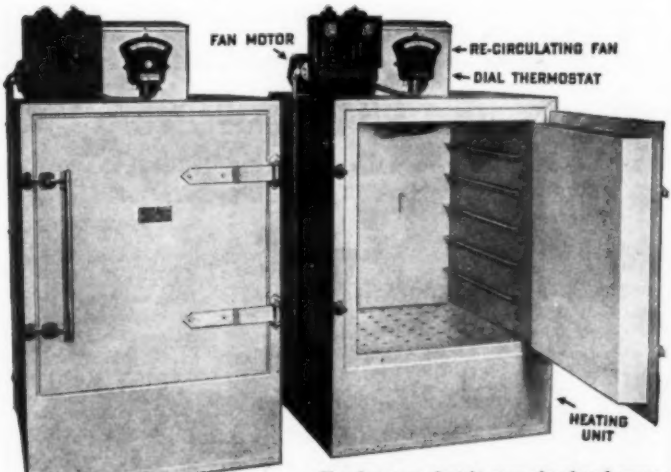
Electric Paint Remover

The Safe-Way electric paint remover, announced by Dumore Appliance Co., 149 Church St., New York, N. Y., takes off all paint film right down to the original surface without burning or scorching, regardless of number of coats. The tool is attached to a long extension cord which can be plugged into any electric outlet. According to the manufacterer, it removes paint four times faster than a blow torch or other hand methods and does the job better with less labor.

Electric Oven

The Young & Bertke Co., 1250 Hulbert Ave., Cincinnati, Ohio, announces a thermostatically-controlled electrically-heated oven rated to bake finishes at temperatures of anywhere from 150 to 450°F. (higher if desirable). The heating unit is in the bottom and consists of a 2½-k.w. indestructible ribbon type wound on porcelain insulators and supported in a steel frame with special alloy rods. Control includes two push-button type switches with overload relays and one automatic contactor with pedestal mounting.

Outside air is taken into the oven

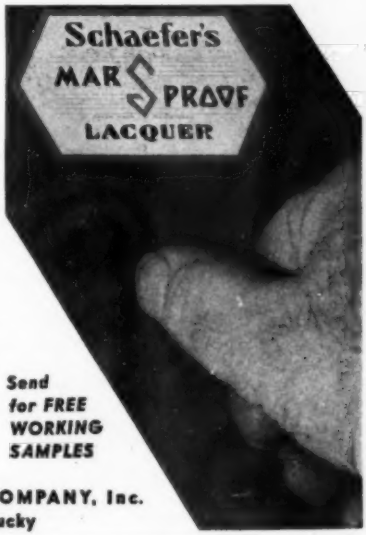


Showing new electric oven closed and open; inside dimensions are 24x24x30-in. high.

HERE it is!

cannot be marred or scratched

A lacquer finish that cannot be marred or scratched with the thumbnail, or other destructive agencies—a much tougher piece of goods than the ordinary lacquers. It produces a splendid transparent finish of full depth on maple, walnut, gum, mahogany and other cabinet woods . . . It is made in either the Clear Gloss Rubbing or the Satin Finish. Mar Proof Lacquer Sealer is recommended for the first coat.



Send for FREE WORKING SAMPLES

THE SCHAEFER VARNISH COMPANY, Inc.
Louisville — — Kentucky

through an adjustable damper located on the fan housing. The air is drawn from the top of the oven by means of a fan which blows it through two insulated ducts (built into rear panel of oven) into the heater chamber. This air is heated and passes through two grills into the oven.

An illustration of the oven, closed and open, appears in the accompanying cut.

Automatic Air-Painting Unit

An Automatic Airpainting Unit with a 32-in. stroke air-operating oscillating arm has been developed for coating metal tile squares automatically. A steady, continuous production of 1875 metal tile squares every hour is readily obtained from this unit, according to the manufacturer, Paasche Airbrush Co., 1917 Diversey Parkway, Chicago, Ill. The two automatic airguns automatically oscillate back and forth and apply the exact amount of material desired for coating the product.

For automatically coating flat work.

The unit is 21-ft. long, 3-ft. wide, 2½-ft. high, and the speed of the conveyor is variable from 2½ to 5 lineal feet per minute. The unit comes complete as illustrated, with ventilating duct, fireproof ventilating unit, pressure-feed material tank, and enclosed coating station.

Equipment of this type is in line with the increasing trend toward automatic precision finishing.

To Kill Graining in Fir Panels

In reading over August issue of INDUSTRIAL FINISHING, the article "Finishing Fabric Covered Aircraft" (pages 22-24) is interesting to us. We want to secure complete information on the "dope" mentioned in this article.

We are using large quantities of fir and pine plywood, finishing this material in synthetic enamel, and find that regardless of the finishing, the graining inevitably shows on the surface. We are of the opinion that perhaps this "dope" material may be of some value to us in putting a facing on the veneer, so that the subsequent enameling will not be impaired by the graining below.

Will you please forward us information as to where this "dope" may be obtained, so that we might test this material in our plant?—L. G. Co.

Questions Answers

The problem of obscuring the grain of these two types of wood has been submitted to us many times before . . . Airplane dopes will not accomplish this. Such products are made from high-viscosity nitrocellulose containing solvents that cause rapid drying, and accordingly a great deal of shrinkage occurs. As a matter of fact this is a function of the

3 PROBLEMS SOLVED BY

Improved Water White Lacquer

HERE'S a water white lacquer offering a unique combination of advantages... as a top coat over white lacquers... as a natural finish on firwood veneer... for interior work on house trailers, etc. These specifications tell you why!

(1) 27% Solids
Sprays with ordinary equipment. Eliminates the expensive, time-consuming second coat.

(2) Non-Yellowing

(3) Very High Gloss
May be rubbed or polished.

MARTIN VARNISH CO.
900 WEST 49TH PLACE CHICAGO, ILLINOIS

Kindly mention INDUSTRIAL FINISHING when writing advertisers

dope; that is, to shrink the airplane cloth to produce the proper tautness of the wings. The same amount of shrinkage will occur when this product is applied on a fir or pine surface and, in shrinking, the dope film will conform to the irregularities of the wood, accentuating the grain condition.

The dope film will also prevent proper anchorage of the subsequent coats of finishing materials, causing them to pull away from sharp edges and contours of the fabricated product.

Water paints manufactured of a casein glue base have been used on such types of wood with some degree of success, but we cannot unconditionally recommend these due to the expansion and contraction of the wood which will gradually loosen such a film. Neutral paste fillers have also been found satisfactory to some degree, but not altogether.

There is really nothing we know of that will completely prevent the grain from showing after the finish has shrunk and aged.—Zapon Division of Atlas Powder Co.

NOTE BY EDITOR: This question of how to kill the grain in fir wood was answered several months ago in INDUSTRIAL FINISHING as follows:

Taking into consideration the natural alternate soft and hard layers of grain that must be overcome in finishing fir wood, and still keeping an eye on excessive production costs, here is a method that is economical.

First, instead of filling the grain with filler or undercoater, which has a natural tendency to lift the grain, shoot the bare surface with a fog coat of shellac

A partial list of

WALKER'S FINISHES

Fillers
Primers
Enamels
Thinners
Pencil Lacquers
Cable Lacquers
Wood Lacquers
Metal Lacquers
Silver Lacquers
Textile Lacquers
Maintenance Paints
Automotive Finishes
Machine Tool Finishes

The Emblem of Quality in Finishes

The above list is by no means complete, but we trust it will serve to give you an idea of the extent to which WALKER'S chemical staff has solved problems submitted to it.

H. V. WALKER CO.
ELIZABETH, NEW JERSEY

FINISHES
To Fit the Product

New England Warehouse
BROWN & DEAN CO., Providence, R. I.

diluted 50/50 with alcohol. When shooting the fog coat, hold your spray gun about 12-in. from the work, so the fog coat will be applied somewhat dry. By not shooting wet and not piling the shellac on, you will lift the grain only slightly. When the fog coat is thoroughly dry, sand lightly to remove any slight fuzz. Remember, shellac is deceiving; it may appear to be dry and yet require much more drying time.

The second coat of shellac need not be diluted quite as much as the first; use about one-third thinner. If the shellac fog coats are applied correctly and allowed plenty of time to dry, very little surfacer will be necessary.

If there are any hammer marks or dents in the plywood they can now be glazed with a stiff glazing compound. Avoid thin glazing compounds because they shrink when drying. The surfacer should be applied one light coat over another until you are positive that it can be sanded without going through to the bare wood. Should you accidentally sand through to the wood in spots, it will be necessary to again seal with shellac and resurface the spots. Otherwise the grain will lift every time a coat is applied.

The most important operation is sealing the bare wood properly; and when it is once sealed, keep it sealed.

Before applying the final finish coat, the surfacer should be sealed. To apply the final finish, shoot a fog coat of color; then, when it is thoroughly tacky, shoot a slow heavy wet color coat.

Crack Repair

Once in a while we have the panels on our wood caskets crack at the glue joint, or it may be a large weather check. On a large crack such as this, the best thing we can do is put in a wood spline or "dutchman." This is a rather slow and expensive operation.

HIGH VALUE
LOW COST
CROWN "22"
sets new value standard in a full size production gun with complete Fan and Fluid Control, Quart Container Assembly, etc., $22.00 as illustrated.
CROWN SPRAY GUN MFG. CO.
LOS ANGELES CALIF.
Warehouses in Principal Cities

FLOCKS FOR SURFACE COATINGS

All over coating for suede and pile effects.
Stencilled designs; screen process and textile flock printing.

RAYON "Raycote" (Patented No. 2014947) for pile effects.
RAYON "Raymix" for suede effects.
COTTON—"Kingcote" for suede effects.
CELLOPHANE — "Spangles" (Patented No. 1802547) for decorative effects.

Rayon Processing Co. 861 TREMONT STREET CENTRAL FALLS, R. I.

Can you tell us about any better way to do this?—E. Casket Co.

When a crack or check or open joint is repaired with a wood spline, the cabinet maker usually cuts beyond the limits of the crack to enlarge the opening for his spline; then, when the glue coated spline is driven home, it has a tendency to compress the wood slightly on each side. As a result, the spline-repaired crack is unlikely to enlarge sufficiently to show an opening again. In other words the spline repair is usually permanent and when it is cleaned up and finished you have a neat workmanlike job.

Of course, the spline repair is expensive. A putty repair is much cheaper and quicker. Several different brands of crack filler suitable for wood surfaces are on the market and these are used extensively, especially where the surfaces are to be painted or finished in some grain reproduction. Even for a transparent finish, a skillful finisher can touch up a small putty or crack filler repair so well that it will blend in with the surrounding wood and can not be easily detected after finishing coats have been applied. In a letter we are sending you the names and addresses of several manufacturers of repair putty and crack filler.—ED.

Paint to Stick to Chromium

We have a problem of finding a lacquer to stick to polished chromium. This must be colored lacquer, as we are using same for striping. We use a black lacquer for most of these stripes. Can you tell us

FORM-A-ROC

We offer to all industries equipped for baking finishes this highly perfected, heat-converting, synthetic enamel.

FORM-A-ROC

We have combined to an optimum degree the necessary qualities of tremendous hardness, great adhesion, smooth lustrous gloss, and freedom from haze, discoloration and wrinkling.

FORM-A-ROC

Baking schedule is of great flexibility, permitting from 5-50 minutes at 250-375° F.

FORM-A-ROC

No matter which of the present worthy finishes of this type you may be using or planning to use we sincerely recommend that you investigate

FORM-A-ROC

MADE BY

THE VARNISH PRODUCTS CO.

5208 Harvard Avenue

CLEVELAND, O.

of a manufacturer who has a lacquer to fill our needs?—L. R. Co.

We believe your problem isn't so much the finding of a colored lacquer or synthetic enamel that will stick to chromium as it is to properly "treat" or "condition" the chromium surface so that it will take and hold any one of several brands of colored lacquer or synthetic enamels. We are sending you an editorial entitled "Makes Paint Stick to Chromium Plate," which was published on page 59 of April, 1938 issue of INDUSTRIAL FINISHING. This article takes up the identical problem you mention.

Briefly the solution of the problem lies in first wiping or washing the clean polished chromium surfaces with a certain brand of commercial metal cleaner. (There may be more than one brand suitable for this work.) When the surfaces are dry you can apply your striping enamel with the assurance that it will stick to the chromium surface—provided the enamel is one of good qaulity and is formulated for this kind of work. One concern who solved identically the same problem, uses a synthetic baked enamel.—ED.

Light and plenty of it is one of industry's vital needs because it means increased worker efficiency with stepped-up production and fewer rejects. In several new plants the problem of "daylighting" areas distant from the walls is solved by generous use of Insulux glass block in walls and monitors. Daylight is evenly diffused throughout the structure.

Cleaning
Up
with SUNOCO Spirits
READ THIS NEW AND HELPFUL FOLDER ON
METAL CLEANING
...it's free!
Sunoco Spirits meets all industrial demands for an efficient, economical solvent . . . write
SUN OIL CO., Dept. S-2, Phila.
SUNOCO SPIRITS
SUN OILS
PETROLEUM PRODUCTS FOR ALL INDUSTRIES

Luminous, Fluorescent Paints—Their Effects

(Continued from page 32)

tising industries has focused interest in this field. So far the use of fluorescent paints has found its greatest application in short time advertising work and temporary, spectacular displays. There are unlimited possibilities for the use of such materials and every day investigators are finding new applications.

As to the price of these luminous and fluorescent paints, quotations on luminous materials range from $1.00 to $3.00 per ounce, one ounce of material covering about 1-sq.ft. (sometimes more) of surface. Some of the fluorescent paints cost more than this, although one company declares that its brand of "fluorescent lacquer-enamels may be applied over most grounds with a coverage cost of as little as 12 cents per square foot, figured on retail list prices. In the past, fluorescent coating often cost as high as $2.00 per square foot. The lacquer-enamels are packaged in a minimum package size of ¼-pt., the next size being 1-pt., at list prices of $2.50 and $8.75 respectively."

Heat-Resistant White Enamel Tests

HOW MUCH "toasting" can an organic white enamel endure without discoloring? Well, they're improving in that respect! Appliance white enamels have been developed which go a long way forward with honest-to-goodness resistance to sustained heat without loss of whiteness or gloss.

"Reduce oxidation within the

A GOLD SILVER or COPPER Bronze Powder Finish
will improve your product
High in Quality
Low in Cost
Request samples today
The Mitchell-Mayer Co.
ST. LOUIS, MO.

SHEL-MATIC 45

The Modern Spray Gun
Fully enclosed chassis. Feather-touch trigger . . Automatic needle release . . Exclusive straight-line valve action . . Anti-friction spray head . . Easily handled . . Simply adjusted . . Quickly, easily cleaned . . Reduces material waste . . Light, but rugged.
A. SHELBURNE COMPANY
739 SERES AVENUE, LOS ANGELES
★ Complete Automotive and Industrial Spray Equipment ★

film to the vanishing point, and we'll lick heat discoloration." This was the fairly obvious conclusion reached through extended experience, but it proved to be a big order for the technicians to deliver. Most enamels that depend upon any appreciable degree of oxidation in the conversion or hardening process during the bake, fail to meet the test.

And the tests; what are they? The hardest job is to know, in fairness, what is practical and what is not practical. We know what temperatures are met with on every part of a stove in service—or on a water heater or a space heater. They are high, but not excessive. Most designers will agree that a stove which leaked heat excessively would hardly meet engineering tests, and certainly would not be a popular seller.

So, we can enamel the product itself, turn on the heat, and observe what happens as time passes—an eminently fair test, but not practical or satisfying to the manufacturer. The material buyer wants to know more quickly. He wants an accelerated test—a test to the point of destruction to demonstrate what margin of safety is provided, if any.

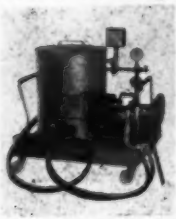
One buyer has a standard test of 100 hours on a stock stove, with the oven set at 550°F. In this case, their highest surface temperature where the finish would be applied, is 250°F.—easily passed by newest formulations of heat-resistant white enamel. Advanced to 650°F., 130 hours, the new enamel likewise passed without discoloration.

Another buyer bases his judgment on the endurance of a panel inside an electric oven at predetermined temperatures and periods. In tests, a temperature of 400°F. caused loss of gloss and some discoloration of the appliance heat-resistant white. While this test did not reveal an impressive margin of safety, the test is not representative of actual service conditions because the oven heated the film on both sides. This same oven, when heated up to 700°F. probably would still heat the outside finished surface to only 250° or possibly up to 300°F.—and only from the bottom side of the film.

Although formulated to focus upon a new service to manufacturers who make products which are used at elevated temperatures, the new appliance heat-

Blanchit
Reg. U. S. Pat. Off.
Wood Bleach
Made by
L. R. van ALLEN COMPANY
(Patent Licensee) CHICAGO

HOT LACQUER UNIT



Complete with circulating pump, thermostat, thermometer, pressure maintaining valve, gauges, and control switches; fully automatic. Portable.

M. & E. MANUFACTURING CO.
720 S. Meridian St., Indianapolis, Ind.

resistant enamels do not require any different technique in handling from other standard synthetic type white enamels.

Proper metal cleaning and the use of primer for proper adhesion are important here, as in quality finishing where heat is not a factor.—H. B. EINBECKER.

Booklet on Rubber Gloss Wax

The Franklin Research Co., 5134 Lancaster Ave., Philadelphia, Pa., announces a new illustrated booklet on Rubber Gloss Wax. This descriptive literature entitled, "YES, They Look Alike," expresses the necessary qualities a practical, economical and safe wax must have. Simple equipment for testing the "Water Resistance" of a wax is illustrated and offered free to those interested in comparing different products.

Protective Heresite Coatings for Autovent Fans

The Autovent Fan & Blower Co., Chicago, Ill., announces a new treatment on their acid-moisture proof and vapor-explosion proof propeller fans. This new chemical coating is known as "Heresite" and is especially recommended for use on fan wheels where extremely corrosive and highly concentrated acid or gas fume conditions prevail.

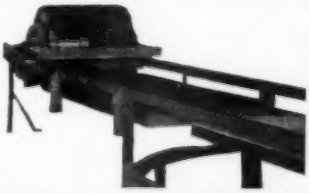
The fan wheels are given multiple coats of Heresite baked finish at a temperature of 375°F. Extensive tests by the company prove that this patented treatment keeps severest acid and practically all metal corroding substances from destroying the metal to which it is applied. Where acid-moisture proof fans are required, Heresite coated fan wheels are of heavy gauge steel, powered by fully enclosed round body motors that provide positive winding protection against all fumes and moisture.

For installations where acid and fume conditions are less severe the fan wheels are treated with three coats of Bakelite lacquer. The vapor-explosion proof units have fan wheels of copper, brass, or other non-ferrous metals and motors bearing Underwriters Label, Class 1, Group D rating. Non-ferrous fan wheels used on vapor-explosion proof fans can also be treated with Heresite where severe corrosive fumes are handled.

"MAGIC" TACK RAGS
IMPROVE YOUR FINISH 100%

MAGIC TACK RAGS remove specks, lint and sand particles— bring out that deep, smooth luster, produce a faultless surface for white or colored finish. Why use "home made" tack rags when you can buy MAGIC TACK RAGS at trifling cost! They are tackier, do not dry— are dust-proof and spontaneous combustion proof. Packed in dozen and gross lots or more. Made only by the

Wm. A. Juergens Co.
4036-40 Lagrange Street,
Toledo, Ohio, U. S. A.
If your dealer does not carry Magic Tack Rags, write us for sample.



Power Graining Machine

1. Cycle time 25 seconds.
2. Will cover a surface up to 31" x 80".
3. Automatic roll cleaner.
4. Cuts production costs.

GRAINING PLATE DIVISION
American Electrotype Company
104 E. MASON ST. • MILWAUKEE, WIS.

Industrial FINISHING

Distributed to Executives and Foremen Finishers in industrial plants where finishing coats are applied with finishing equipment.

Published the 18th of each month by
PRACTICAL PUBLICATIONS, Inc.
222 East Ohio St., Indianapolis, Ind.
Telephone .....Riley 6771

•

President.....A. T. Gaumer
Vice Pres. and Editor.....W. H. Rohr
Treasurer and Adv.-Mgr.....E. A. Dosch
Secretary.....R. E. Suits

•

Subscription Rates per Year
U. S. and Possessions.....$2.00
Canada and Foreign Countries.....$3.00

EDITORIAL

War's Effect on Finishing

Recently, in letters to a very few of our friends, we incidently put to them the question of the European War's possible effect, now and in the future, on industrial finishing. Two interesting replies are as follows:

"I do not think there is one chance in a million of our entering into any war. Too many reasons to enumerate here, but the principal one I can not forego mentioning. A big majority of our foreign born population have been in this country 25 years longer than they were at the beginning of the other war.

"What will happen to finishing, either in the event of prolonged neutrality or of our participation? Few people know what a tremendous factor finishing is in any industry. Few appreciate how many kinds of finishes and finishing there are. Few, if any, realize that Divine Providence saw fit to provide us with nothing usable or attractive that does not require some kind of final finish. Also, no man has yet been able to construct or compound anything that does not require some kind of final finish. Many kinds of finishes are for purposes other than decoration alone.

"My associates, as well as I, believe that our neutrality will be such as to give us increased business. One of the large retail chain stores just gave us an order for one million articles, so there must be others who think the same.

"In the event of war, naturally the finishing will be mostly on war material, but that too takes in a lot of commodities. In any event, a war always creates new necessities and, as a consequence, there will be intensified development."—H. H.

"Relative to the present war in Europe and the possibility of our being drawn into it, I am not entirely sure of the effect on the finishing industry. I have heard some talk of raw material shortage, but we have not been affected either by increased prices or by unavailability of lacquers, enamels and thinners."—W. S.

We will be glad to get the comments of others on this subject —or on others—any time.—ED.

Mystery Unveiled in Modern Finishing Rooms

* Like many industrial processes whose technology was not fully understood, there was a time when finishing methods and procedures were jealously guarded. It has been aptly said that to gain an entrance to the finishing room was as difficult as an entrance to some secret society. That condition no longer exists. The importance and possibilities of organic finishing have attracted the interest of engineers and chemists and the subject is being widely investigated in all its details.

More important, from a practical point of view, is the fact that finishing problems are now being openly discussed and in this connection it is interesting to note the development of published articles. An examination of old copies of technical and trade journals reveals that the first attempts were at best vague and incomplete accounts. The reasons are obvious. Practically no quantitative data were available and those which were considered (mistakenly, many times) to be of importance were kept confidential and never released for publication. Of course, that situation could not and did not persist. The quality and amount of material published today is adequate proof that the old order has definitely passed. Details of the many phases of finishing are completely and accurately described. Drawings, diagrams and actual photographs are used where extra clarification is necessary. No effort is spared in the presentation of useful information.

Through published articles there is a free exchange of ideas and opinions concerning all the ramifications of organic finishing. It is to the advantage of all concerned in this important field that this be continued. New developments are arriving so rapidly that there is no place for the secretive finishing superintendent. In the long run his individual efforts cannot be successful. There must be thorough cooperation and frankly written articles are the means to this end.—W. G. S.

Will Product Finish Sell Your Plant Output?

* Why so many product manufacturers do not realize the importance of finish, I do not know. The value of appearance is so apparent in everything about us, including the flowers, birds, animals and even the sky, that it would seem that any manufacturer's foremost thought would be, "Will it be attractive and will it stay that way a reasonable length of time?" If product manufacturers will only ask themselves, whenever they buy anything personal, "Why did I buy that?" they will find themselves answering so often: "Because I liked the looks of it," that they will soon see the light.

Why doesn't the boss know fundamental requirements and provide for same? Why don't the workmen know and insist on

---

*Guest Editorial .... Many readers can write an excellent editorial — two or three paragraphs presenting a timely suggestion or valuable idea that will stimulate thought on a live subject. The Editor welcomes guest editorials and pays for those that are published.

proper facilities? Who was there to teach either of them? Where did you ever see a text book that specified fundamental requirements for specific results? When did you ever hear a salesman of material or supplies say: "Show me your facilities and I will tell you what to expect?"

Many executives look upon finishing as a necessary evil, because they do not realize that it should be the first consideration instead of the last, and because they get such variable results. They will continue in that frame of mind until every salesman of equipment, material and supplies, every text book and every trade journal preaches persistently and continuously for rigid adherence to fundamental requirements for specific results. Then and not until will plant executives be in position to watch costs go down and sales go up.

Later on I will give specific and detailed explanations of the various fundamentals. Also, I will give an account of how a certain coating of one small part of a mechanism actually increased a manufacturer's business 65%, and why. There will also be true stories as to specific cases, proving what a tremendous part finishing has had in the development of numerous industries.—H. H. HIGBERT.

Sales and Salesmen That "Click"

★ A sale "clicks" the instant the conclusive value of a product flashes through the customers mind. Good salesmen constantly endeavor to arrive at this point by a clear presentation of all pertinent facts and by avoiding all confusing issues or generalities.

In the year 1926, a salesman for a manufacturer of quality finishing materials, during his first call on a manufacturer of breakfast sets, did a perfect job of selling. His initial call lasted less than ten minutes but resulted in the purchase of more than $18,000 worth of finishing materials in the following two years.

Briefly he said. "I represent So and So, who specialize in quality furniture finishes. We have developed a durable, colored decorative finish that is less expensive, as it eliminates several operations. We have an excellent art department whose services are gratis to purchasers of our product."

He named several leading furniture manufacturers who had found this service highly beneficial, and continued. "I am sure that we can be of valuable assistance if you will supply us with samples of your product on which we can develop decorative color effects. There will be no obligation on your part unless you finally adopt same; then, in consideration, we will naturally expect you to purchase materials from us." He added a brief but complete description of the method of application, while his prospect looked at a sample of a finished panel.

He concluded by saying. "When I have returned your pieces, finished, I am sure they will capture your imagination. After you have had an opportunity to test our samples and complete your cost analysis I will return, to be of any further help that you may think necessary." His entire presentation was complete.

A 5-piece unfinished breakfast set was sent to his company to be finished. It was returned shortly with each piece finished in a different color scheme. All of these pieces were more attractive than any the company had previously made. Samples of materials were applied and tested. All claims made by the salesman were substantiated—and an appreciable initial order was mailed to the factory before the salesman had an opportunity to return and get the re-action.

The breakfast set manufacturer was so impressed by the manner and means employed to obtain his account that he furnished each of his salesmen, who traveled by automobile, with a completed chair in addition to color panels, and insisted that it be shown to all customers.

In conclusion it must be said that the finishing materials, their method of application, and the resultant completed effect on the breakfast sets, all embodied value that was just then appearing on the market. This value, augmented by sales "click" methods, produced a profitable sales volume that lasted until competition followed suit and that same finishing practice became general.—T. J. P.

Avoid That Worried Look

The man with a worried look is almost advertising his own incompetence. In other words he shows that he hasn't got the job he is being paid for, well in hand. For positions of responsibility, employers are seeking men who have complete confidence and self-assurance. Men of this type are resourceful and they produce results, even in the face of difficulties. Problems are always menacing the finishing foreman, regardless of what facilities are available for getting out the work, and he should school himself to avoid worrying about them.

What prompts the foregoing paragraph is a slight knowledge of conditions that have lead to three or four foremen finishers being relieved of their jobs recently. Two of them were experienced men who should have been able to hold their positions easily—but they lacked confidence, and this was apparent even to a casual visitor. If one hasn't confidence in himself, he can not expect to instill confidence in those with whom he works.

Special Wood Bleach Offer

1 quart Ken-Wood Decolorant
1 quart Ken-Wood Aspen Concentrate

— $2.00 —

If cash is sent with order, shipment prepaid anywhere in U. S. A.

(Jobbers please inquire for prices. Available in quarts, gallons and carboys.)

Kenneth O'Meara, Holland, Mich.

METALPREP
"USED FIRST, MAKES YOUR PAINT FINISH LAST"

Used on iron, aluminum, galvaneal, steel and galvanized iron surfaces

The ideal preparation for cleaning and preparing all sheet metal surfaces before painting. Removes rust, grease.

Write for Literature Today

Neilson Chemical Co.
6564 Benson St. Detroit, Mich.

Australian Representatives:
Hardie Trading Pty., Ltd., Melbourne

OVENS • DRYERS • FURNACES
ACCURATE CONTROL
WRITE FOR DETAILS
Ferro Enamel Corporation • 4150 E. 56th St. • Cleveland, Ohio

Letters from I. F. Readers

(Continued from page 9)

used to make ink rollers for printing presses. Any local printer can tell you where to get it. The cores do not need painting. A mold that will hold the core absolutely centered is necessary. We can furnish molds, if given size required.—D. I. Co.

For Exterior Masonry

Will you please complete the address on the enclosed envelope and send the letter on to Bedard and Mercency Mill Co.? Their name was mentioned in an article about "Exterior Masonry" on page 7 of August 1939 issue.—O. A. Co. (Caskets).

It's 101 N. Lombard Ave., Oak Park, Ill.—ED.

Wood Graining

On page 9 of July issue, under the heading of "Wood Graining", you mention that you are sending some earlier articles on the reproduction of wood graining, which have appeared in your splendid publication. We would appreciate receiving this information also. — S. C. Co. (Caskets).

I have a customer who is interested in equipment for graining sheet metal parts. Could you tell me what firms to get in touch with for all types of graining equipment?—D. V. Co. (Furnaces for all Purposes).

Metal Mirror

We have a customer who would like to use, in the home he is building, a metal plate that will look like a mirror on a large washstand in his wife's bathroom. He had at first thought of using a mirror, but he was afraid the glass would crack, although I disagreed with this. He still feels that he is right. What I want to know is whether you could tell me what kind of a metal plate and finish to use that would give the same appearance as a mirror.—R. H. Co. (Builders Hardware).

We suggest Metal-Bord, which is a highly polished, pre-finished, bright metal sheet cemented to a non-metallic backing. It is often used for mirrors. We are notifying the manufacturer of your inquiry.—ED.

Wants Wood Cabinets

We are interested in making contact with some company equipped to manufacture wood cabinets 6x5x5-in., at a reasonable price, in quantities of 300 to 500 per month. If you can be of any assistance to us we will appreciate it.—K. N. Mfg. Co.

French Polishing

WIRE OUR EXPENSE ISSUE OF INDUSTRIAL FINISHING ON WHICH INFORMATION WAS GIVEN REGARDING FRENCH POLISHING AS REFERRED TO IN MARCH 1937 ARTICLE BY WATT AIR MAIL ANY INFORMATION YOU HAVE AVAILABLE ON THIS SUBJECT.—H. R. H.

Solvent Recovery

Will you please furnish me with a few names and addresses of lacquer and paint refineries, where lacquer sludge and waste thinners and solvents may be reclaimed?—R. G. C.

We suggest Solvents Recovery Service, Newark, N. J., whose advertisement appears in Sept. issue, page 66.—ED.

Baked Enamel Stripper

In INDUSTRIAL FINISHING for July 1939, page 61, I notice an article headed "Baked Enamel Stripper" by The Enthone Co. of New Haven, Conn. I am very much interested and have written this company, but received no reply. Would appreciate if you could forward me this company's distributor's address or direct

factory connections here in New York City. If the stripper is all this company claims, I feel quite sure that I will be a constant user of same.—C. N.

Infra Red Lamps

We are under the impression that in a former issue, Infra Red Lamps were advertised for heating purposes. If so, will you kindly sends us the name of the firm and greatly oblige. —H. G. Corp. (Radiant Broiler).

Grained and Floral Decals

I would like to obtain the names and addresses of manufacturers of grained-transfers — walnut, mahogany and other hardwood veneer imitations. Also, manufacturers of stock transfers in modern floral, fruit and animal-designs, in water-slide and heat-fixing quality?—B. F., London, Eng.

Sherwin-Williams Announces Product Finishing Program

According to Mr. K. H. Wood, Director of Sales, The Sherwin-Williams Co. is instituting a further program of specialization in the important products finishing field. A complete technically trained field staff under G. H. Robertson will call on and serve the larger products finishing accounts. Three specific appointments have been announced.

Mr. G. L. Hehl, formerly plant superintendent at Newark, N. J., has been appointed Eastern Manager of Industrial Sales effective Sept. 1. Mr. Hehl will head this work up in North Atlantic, South Atlantic and New England Districts and will have under his personal direction an organization of trained industrial representatives.

Mr. H. S. Sherman, formerly of Cleveland Technical Service Staff, heads up similar work in North Central and South Central Districts.

Mr. Lyman Weber, formerly of Chicago factory, heads a similar program up in Western, Southwestern and Mississippi Valley Districts.

All these men report direct to Mr. G. H. Robertson at Cleveland.

Mr. Carl Sturmer has been appointed General Superintendent of the company's Newark, N. J., plant. Mr. Sturmer has been, for 13 years, at the Chicago plant where he has been superintendent of the lacquer plant and for the past two years, production superintendent of lacquer, paint and varnish at Chicago.

Tung Oil Alternatives

On Wednesday, Sept. 20, Dr. R. J. Moore, Development Manager of the Varnish-Resin Division, Bakelite Corp., Bloomfield, N. J., addressed the New York Paint and Varnish Production Club on the subject "Tung Oil Alternatives." In this talk the chemical characteristics of the various drying and semi-drying oils other than tung oil were reviewed and the lateat developments in fortifying alternative oils with Bakelite resins to produce quick-drying white enamels were shown in panels and tables of properties. The oils illustrated were linseed, perilla, soya, fish, cicoil, Neofat and dehydrated castor oils.

Classified Advertising

Rate: 45 cents per line per insertion—minimum $1.35

WANTED.

An experienced Cost Reduction Enameling man. Responsible position available to right man with experience in Porcelain Enameling, Punch Press Work, Synthetic Enameling and associated processes. State qualifications and give references. Address IF-767, care Industrial Finishing.

FINISHER—DEMONSTRATOR

Wanted for Wood Furniture. A large manufacturer in the East requires the services of a man who knows wood finishing, and can evaluate and demonstrate fillers, stains and top coats. Our employees know of this advertisement. Address IF-768, care Industrial Finishing.

FACTORY REPRESENTATIVE

Wanted for well-known line of Portable Sanding machines now widely used in Furniture and Industrial plants generally. Territories open include Twin Cities, Texas, Oklahoma, Louisiana, Miss., Ala., Florida, Iowa, Neb., Colo., Wash., Ore., Montreal. Prefer men now selling this market. Liberal commission. Give full details first letter. See our ad this publication. STERLING PRODUCTS CO., 2457 Woodward ave., Detroit.

"PEERLESS" SPRAY BOOTHS.

Efficient design; sturdy construction—yet lowest prices: 4-ft. only $56.00; 6-ft. $85.00; 8-ft. $100.00, complete with CHAMPION Exhausters.

INDUSTRIAL EQUIPMENT CO.

208 N. Wells st. Chicago, Illinois

Practical Japanning and Enameling

HERE is the first authoritative handbook of its kind, containing much information that has never before been published. You will find between its covers facts, processes, and formulae that have been considered secret by many japanners.

The author has actually been doing this work for others for many years and he knows whereof he speaks. No one has ever gone into the subject of mental finishing more deeply than he nor has the subject ever been explained so clearly and effectively. This book was eight years in preparation.

Color plates and a multitude of tables and illustrations make the text even more clear and understandable. The volume is bound in harmony with its companions of the Practical Finishing Series and makes a rich, attractive appearance . . . 22 chapters.

Price $3.50 . . . . money refunded if book is not satisfactory.

Practical Publications, Inc.
222 EAST OHIO ST.
INDIANAPOLIS, INDIANA

Index to Advertisers

Advance Paint Co. ..... Third Cover
American Electrotype Co. 65
Atlas Powder Co. 2
Ault & Wiborg Corp. 31

Berry Brothers 49
Binks Mfg. Co. 20-21

Claremont Waste Mfg. Co. 8
Classified Advertising 71
Crown Spray Gun Mfg. Co. 60

Day & Co., James B. 45
DeVilbiss Co., The 5
Dolan & Company, V. J. 9
du Pont deNemours & Co., E. I. 40-41

Egyptian Lacquer Mfg. Co. 25

Ferro Enamel Corp. 70

Glidden Co., The 23

Hilo Varnish Corp. ..... Front Cover

Industrial Tape Corp. 51

Johnson & Sons, S. C. 39
Juergens Co., Wm. A. 65

Lilly Varnish Co. 37

Maas & Waldstein Co. 17
Mahon Co., The R. C. ..... Back Cover
Martin Varnish Co. 58
Minnesota Mining & Mfg. Co. 35
Mitchell-Mayer Co. 63
M. & E. Mfg. Co. 64

Neilson Chemical Co. 69

O'Meara, Kenneth 69
Oxford Varnish Corp. 53

Paasche Airbrush Co. 7

Rayon Processing Co. 60
Rockford Varnish Co. 47
Ross Engineering Corp., J. O. 19
Roxalin Flexible Lacquer Co. ..... Second Cover
Rudd Lacquer & Sealer Corp. 33

Schaefer Varnish Co. 57
Shelburne Co., A. 63
Sterling Products Co. 1
Sun Oil Co. 62

Tousey Varnish Co. 55

United Lacquer Mfg. Corp. 6

van Allen Co., L. R. 64
Varnish Products Co. 61

Walker Co., H. V. 59

Zapon Co., The 2
Zapon-Brevolite Lacquer Co. 2

NISHING

ex to

e r s

rd Cover
65
2
31

49
20-21

8
71
60

45
5
9

E. I.
40-41

25

70

23

t Cover

51

39
65

37

17
k Cover
58
Co. 35
63
64

69

69
53

7

60
47
O. 19
o.
d Cover
p. 33

57
63
1
62

55

6

64
61

59

2
o. 2